LANPARTY LT X48-T3RS

System Board
User's Manual

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FCC and DOC Statement on Class B

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio TV technician for help.

Notice:

1. The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

2. Shielded interface cables must be used in order to comply with the emission limits.

Table of Contents

Warranty..... 5
Static Electricity Precaution..... 6
Safety Measures..... 6
About the Package..... 7
Before Using the System Board..... 7

Chapter 1 - Introduction..... 8
- Specifications..... 8
- Features..... 10

Chapter 2 - Hardware Installation..... 16
- System Board Layout 16
- System Memory..... 17
- CPU..... 23
- Northbridge Heat Sink..... 28
- Jumper Settings..... 32
- Rear Panel I/O Ports..... 39
- Bernstein Audio Module..... 41
- Internal I/O Connectors..... 43

Chapter 3 - BIOS Setup..... 54
- Award BIOS Setup Utility..... 54
- RAID BIOS..... 102
- Updating the BIOS..... 103

Chapter 4 - Supported Software..... 105
Chapter 5 - RAID..... 121
Chapter 6 - ATI CrossFire Technology..... 128
Appendix A - System Error Message..... 136
Appendix B - Troubleshooting..... 138
Appendix C -Debug LED POST and Troubleshooting 142

Warranty

1. Warranty does not cover damages or failures that arised from misuse of the product, inability to use the product, unauthorized replacement or alteration of components and product specifications.

2. The warranty is void if the product has been subjected to physical abuse, improper installation, modification, accidents or unauthorized repair of the product.

3. Unless otherwise instructed in this user's manual, the user may not, under any circumstances, attempt to perform service, adjustments or repairs on the product, whether in or out of warranty. It must be returned to the purchase point, factory or authorized service agency for all such work.

4. We will not be liable for any indirect, special, incidental or consequencial damages to the product that has been modified or altered.

Static Electricity Precautions

It is quite easy to inadvertently damage your PC, system board, components or devices even before installing them in your system unit. Static electrical discharge can damage computer components without causing any signs of physical damage. You must take extra care in handling them to ensure against electrostatic build-up.

1. To prevent electrostatic build-up, leave the system board in its anti-static bag until you are ready to install it.
2. Wear an antistatic wrist strap.
3. Do all preparation work on a static-free surface.
4. Hold the device only by its edges. Be careful not to touch any of the components, contacts or connections.
5. Avoid touching the pins or contacts on all modules and connectors. Hold modules or connectors by their ends.

Important:
Electrostatic discharge (ESD) can damage your processor, disk drive and other components. Perform the upgrade instruction procedures described at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system chassis. If a wrist strap is unavailable, establish and maintain contact with the system chassis throughout any procedures requiring ESD protection.

Safety Measures

To avoid damage to the system:

- Use the correct AC input voltage range.

To reduce the risk of electric shock:

- Unplug the power cord before removing the system chassis cover for installation or servicing. After installation or servicing, cover the system chassis before plugging the power cord.

Battery:

- Danger of explosion if battery incorrectly replaced.
- Replace only with the same or equivalent type recommend by the manufacturer.
- Dispose of used batteries according to local ordinance.

About the Package

The system board package contains the following items. If any of these items are missing or damaged, please contact your dealer or sales representative for assistance.

- ☑ One system board
- ☑ One Bernstein audio module with cable
- ☑ One IDE round cable
- ☑ One floppy round cable
- ☑ Four Serial ATA data cables
- ☑ Four Serial ATA power cables
- ☑ One I/O shield
- ☑ One RAID driver diskette
- ☑ One "Mainboard Utility" CD
- ☑ One user's manual

The system board and accessories in the package may not come similar to the information listed above. This may differ in accordance to the sales region or models in which it was sold. For more information about the standard package in your region, please contact your dealer or sales representative.

Before Using the System Board

Before using the system board, prepare basic system components.

If you are installing the system board in a new system, you will need at least the following internal components.

- A CPU
- Memory module
- Storage devices such as hard disk drive, CD-ROM, etc.

You will also need external system peripherals you intend to use which will normally include at least a keyboard, a mouse and a video display monitor.

Chapter 1 - Introduction

Specifications

Processor	• LGA 775 socket for: - Intel® Core™2 Quad and Intel® Core™2 Duo • Supports Intel Enhanced Memory 64 Technology (EMT64T) • Supports Enhanced Intel SpeedStep Technology (EIST) • Supports Intel Hyper-Threading Technology • Supports 1600/1333/1066/800MHz FSB
Chipset	• Intel® chipset - Northbridge: Intel® X48 Express chipset Intel® Fast Memory Access technology - Southbridge: Intel® ICH9R
System Memory	• Four 240-pin DDR3 DIMM sockets • Supports DDR3 800/1066/1333/1600MHz • Delivers up to 21Gb/s bandwidth at 1333MHz • Supports dual channel (128-bit wide) memory interface • Supports up to 8GB system memory • Supports unbuffered x8 and x16 DIMMs
Expansion Slots	• 2 PCI Express (Gen 2) x16 slots (PCIE 1 and PCIE 3) - 2-way CrossFire at x16/x16 bandwidth - 2-way CrossFire + Physics at x16/x16/x4 bandwidth • 1 PCI Express x1 slot (PCIE 2) • 1 PCI Express x4 slot (PCIE 4) • 3 PCI slots
BIOS	• Award BIOS • 8Mbit flash memory • CMOS Reloaded
Audio	• Bernstein audio module - Realtek ALC885 8-channel High Definition Audio CODEC - Center/subwoofer, rear R/L and side R/L jacks - Line-in, line-out (front R/L) and mic-in jacks - 2 coaxial RCA S/PDIF-in/out jacks - 1 optical S/PDIF connector - 1 CD-in connector - 1 front audio connector • DAC SNR/ADC SNR of 106dB/101dB • Full-rate lossless content protection technology
LAN	• Marvell 88E8052 and Marvell 88E8053 PCIE Gigabit LAN controllers • Fully compliant to IEEE 802.3 (10BASE-T), 802.3u (100BASE-TX) and 802.3ab (1000BASE-T) standards

Storage	• Intel ICH9R chip - Intel Matrix Storage technology - Supports up to 6 SATA devices - SATA speed up to 3Gb/s - RAID 0, RAID 1, RAID 0+1 and RAID 5 • JMicron JMB363 PCI Express to SATA and PATA host controller - Supports up to 2 UltraDMA 100Mbps IDE devices - Supports 2 SATA devices - SATA speed up to 3Gb/s - RAID 0 and RAID 1
IEEE 1394	• VIA VT6307 • Supports two 100/200/400 Mb/sec ports
Rear Panel I/O	• Mini-DIN-6 PS/2 mouse port and PS/2 keyboard port • 1 IEEE 1394 port • 6 USB 2.0/1.1 ports • 2 RJ45 LAN ports
Internal I/O	• 3 connectors for 6 additional external USB 2.0 ports • 1 connector for an external COM port • 1 connector for an IEEE 1394 port • 1 connector for the Bernstein audio module • 1 front audio connector (on the Bernstein audio module) • 1 CD-in connector (on the Bernstein audio module) • 1 S/PDIF connector (on the Bernstein audio module) • 1 IrDA connector and 1 CIR connector • 8 Serial ATA connectors • 1 40-pin IDE connector and 1 floppy connector • 1 24-pin ATX power connector • 1 8-pin 12V power connector • 2 4-pin 5V/12V power connectors (FDD type) • 1 front panel connector • 6 fan connectors • 1 diagnostic LED • EZ touch switches (power switch and reset switch)
Power Management	• ACPI and OS Directed Power Management • ACPI STR (Suspend to RAM) function • Wake-On-PS/2 / Wake-On-USB Keyboard/Mouse • Wake-On-LAN and Wake-On-Ring • RTC timer to power-on the system • AC power failure recovery
Hardware Monitor	• Monitors CPU/system/Northbridge temperature and overheat alarm • Monitors Vcore/Vdimm/Vnb/VCC5/12V/V5sb/Vbat voltages • Monitors the speed of the cooling fans • CPU Overheat Protection function monitors CPU temperature and fan during system boot-up - automatic shutdown upon system overheat
PCB	• 6 layers, ATX form factor; • 24.5cm (9.64") x 30.5cm (12")

Features

DDR3 delivers increased system bandwidth and improved performance. It offers peak data transfer rate of up to 21 Gb/s bandwidth. The advantages of DDR3 are its higher bandwidth and its increase in performance at a lower power than DDR2.

ATI's CrossFire™ technology drives your PC to a new peak of performance by combining multiple GPUs in a single system. By connecting a Radeon CrossFire Edition graphics card and a standard PCI Express graphics card, the power of the dual GPUs (Graphics Processing Units) within the system will accelerate your gaming performance and improve image quality.

Aside from dual GPU for 3D rendering, CrossFire's new feature - asymmetric processing technology, allows adding another dedicated GPU for physics processing. The 3 GPUs simultaneously handle Data Parallel Processing (DPP) computing tasks such as game rendering and physics in a single system. This provides more realistic cutting edge 3D graphics to run at high resolutions.

The Realtek ALC885 on the Bernstein audio module supports 6 audio jacks that provide 8-channel audio output for advanced 7.1-channel super surround sound audio system. It is also equipped with a CD-in connector, front audio connector and S/PDIF output allowing digital connections with DVD systems or other audio/video multimedia.

S/PDIF is a standard audio file transfer format that transfers digital audio signals to a device without having to be converted first to an analog format. This prevents the quality of the audio signal from degrading whenever it is converted to analog. S/PDIF is usually found oyn digital audio equipment such as a DAT machine or audio processing device. The S/PDIF interface on the system board sends surround sound and 3D audio signal outputs to amplifiers and speakers and to digital recording devices like CD recorders.

The JMicron JMB363 controller supports up to two UltraDMA 100Mbps IDE devices and two Serial ATA devices.

Serial ATA is a storage interface that is compliant with SATA 1.0 specification. Intel ICH9R and JMicron JMB363 both support speed of up to 3Gb/s. Serial ATA improves hard drive performance faster than the standard parallel ATA whose data transfer rate is 100MB/s.

The Intel ICH9R chip allows configuring RAID on Serial ATA devices. It supports RAID 0, RAID 1, RAID 0+1 and RAID 5. The JMicron JMB363 chip allows configuring RAID on another 2 Serial ATA devices. It supports RAID 0 and RAID 1.

The Marvell 88E8052 and Marvell 88E8053 PCI Express Gigabit LAN controllers support up to 1Gbps data rate.

IEEE 1394 is fully compliant with the 1394 OHCI (Open Host Controller Interface) 1.1 specification. It supports up to 63 devices that can run simultaneously on a system. 1394 is a fast external bus standard that supports data transfer rates of up to 400Mbps. In addition to its high speed, it also supports isochronous data transfer which is ideal for video devices that need to transfer high levels of data in real-time. 1394 supports both Plug-and-Play and hot plugging.

1 Introduction

CMOS Reloaded is a technology that allows storing multiple user-defined BIOS settings by using the BIOS utility to save, load and name the settings. This is especially useful to overclockers who require saving a variety of overclocked settings and being able to conveniently switch between these settings simultaneously.

The options in Genie BIOS allows configuring the system to optimize system performance and overclock capability.

The presence of the power switch and reset switch on the system board are user-friendly especially to DIY users. They provide convenience in powering on and/or resetting the system while fine tuning the system board before it is installed into the system chassis.

The system board supports Intel processors with Hyper-Threading Technology. Enabling the functionality of Hyper-Threading Technology for your computer system requires **ALL** of the following platforms.

Components:

- CPU - an Intel® Pentium® 4 Processor with HT Technology
- Chipset - an Intel® chipset that supports HT Technology
- BIOS - a BIOS that supports HT Technology and has it enabled
- OS - an operating system that includes optimizations for HT Technology

For more information on Hyper-Threading Technology, go to: www.intel.com/info/hyperthreading.

PCI Express Gen 2 is a high bandwidth I/O infrastructure that possesses the ability to scale speeds by forming multiple lanes. The x16 PCI Express lane supports transfer rate up to 5Gb/s.

CPU Overheat Protection

CPU Overheat Protection has the capability of monitoring the CPU's temperature during system boot up. Once the CPU's temperature exceeded the temperature limit pre-defined by the CPU, the system will automatically shutdown. This preventive measure has been added to protect the CPU from damage and insure a safe computing environment.

IrDA

The system board is equipped with an IrDA connector for wireless connectivity between your computer and peripheral devices. The IRDA (Infrared Data Association) specification supports data transfers of 115K baud at a distance of 1 meter.

USB 2.0

The system board supports USB 2.0 and USB 1.1 ports. USB 1.1 supports 12Mb/second bandwidth while USB 2.0 supports 480Mb/second bandwidth providing a marked improvement in device transfer speeds between your computer and a wide range of simultaneously accessible external Plug and Play peripherals.

Wake On Ring

This feature allows the system that is in the Suspend mode or Soft Power Off mode to wake-up/power-on to respond to calls coming from an external modem or respond to calls from a modem PCI card that uses the PCI PME (Power Management Event) signal to remotely wake up the PC.

Important:
If you are using a modem add-in card, the 5VSB power source of your power supply must support a minimum of ≥720mA.

Wake On LAN

This feature allows the network to remotely wake up a Soft Power Down (Soft-Off) PC. It is supported via the onboard LAN port or via a PCI LAN card that uses the PCI PME (Power Management Event) signal. However, if your system is in the Suspend mode, you can power-on the system only through an IRQ or DMA interrupt.

Important:
The 5VSB power source of your power supply must support ≥720mA.

Wake On PS/2

This function allows you to use the PS/2 keyboard or PS/2 mouse to power-on the system.

Important:
The 5VSB power source of your power supply must support ≥720mA.

Wake On USB

This function allows you to use a USB keyboard or USB mouse to wake up a system from the S3 (STR - Suspend To RAM) state.

Important:
If you are using the Wake-On-USB Keyboard/Mouse function for 2 USB ports, the 5VSB power source of your power supply must support ≥1.5A. For 3 or more USB ports, the 5VSB power source of your power supply must support ≥2A.

RTC

The RTC installed on the system board allows your system to automatically power-on on the set date and time.

STR

The system board is designed to meet the ACPI (Advanced Configuration and Power Interface) specification. ACPI has energy saving features that enables PCs to implement Power Management and Plug-and-Play with operating systems that support OS Direct Power Management. ACPI when enabled in the Power Management Setup will allow you to use the Suspend to RAM function.

With the Suspend to RAM function enabled, you can power-off the system at once by pressing the power button or selecting "Standby" when you shut down the system without having to go through the sometimes tiresome process of closing files, applications and operating system. This is because the system is capable of storing all programs and data files during the entire operating session into RAM

(Random Access Memory) when it powers-off. The operating session will resume exactly where you left off the next time you power-on the system.

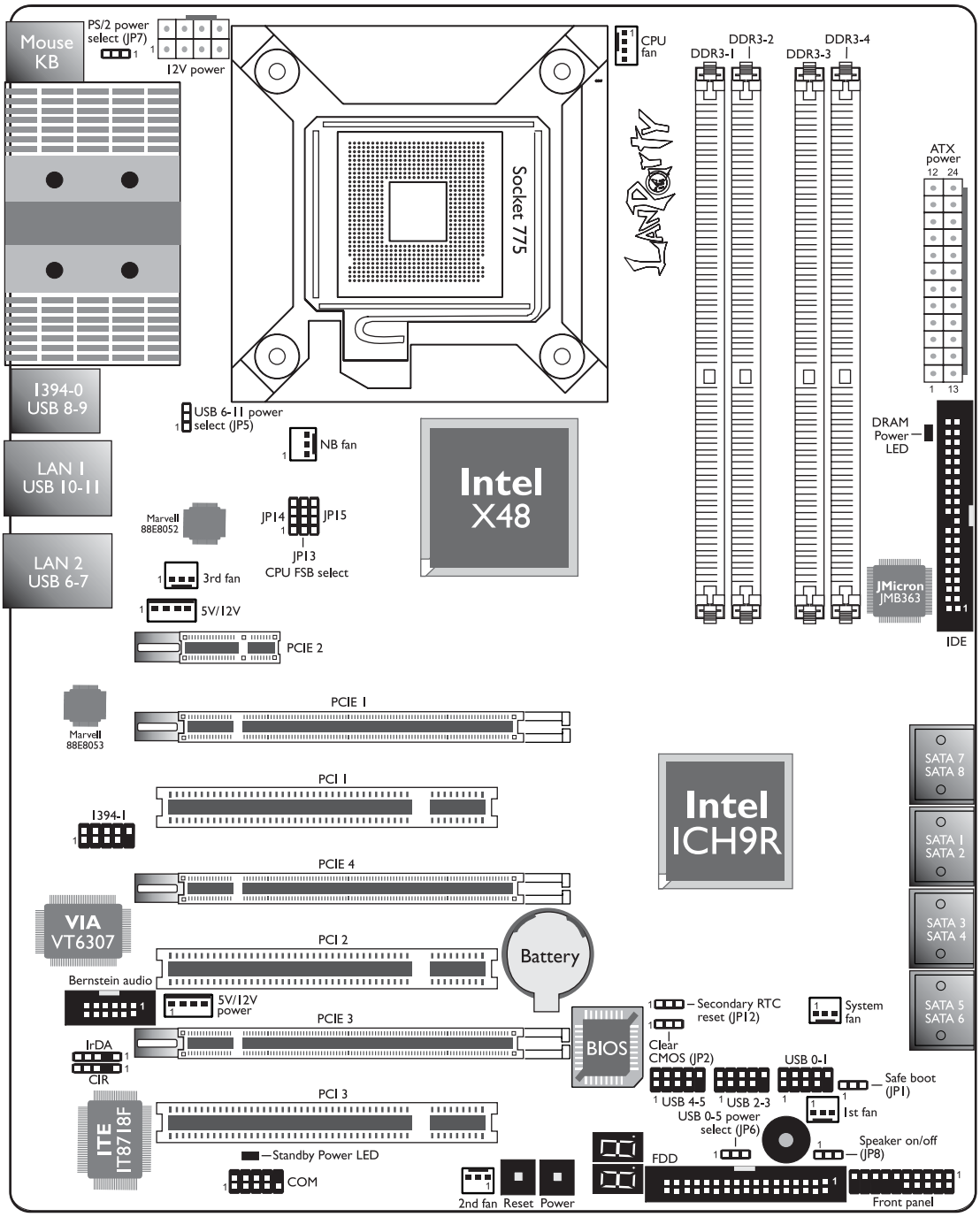
Important:

The 5VSB power source of your power supply must support ≥1A.

When power returns after an AC power failure, you may choose to either power-on the system manually or let the system power-on automatically.

Chapter 2 - Hardware Installation

System Board Layout



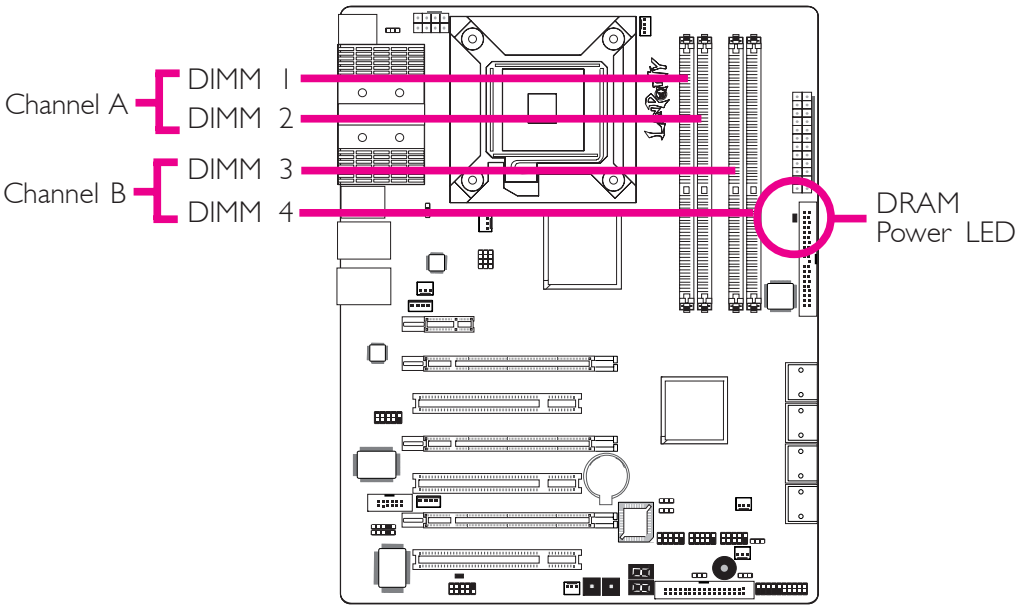
Warning:

Electrostatic discharge (ESD) can damage your system board, processor, disk drives, add-in boards, and other components. Perform the upgrade instruction procedures described at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system chassis. If a wrist strap is unavailable, establish and maintain contact with the system chassis throughout any procedures requiring ESD protection.

System Memory

Warning:

When the DRAM Power LED lit red, it indicates that power is present on the DIMM sockets. Power-off the PC then unplug the power cord prior to installing any memory modules. Failure to do so will cause severe damage to the motherboard and components.



The four DIMM sockets on the system board are divided into 2 channels:

Channel A - DIMM 1 and DIMM 2
Channel B - DIMM 3 and DIMM 4

The system board supports the following memory interface.

Single Channel (SC)
Data will be accessed in chunks of 64 bits (8B) from the memory channels.

Virtual Single Channel (VSC)
If both channels are populated with different memory configurations, the MCH defaults to Virtual Single Channel.

Dual Channel (DC)
Dual channel provides better system performance because it doubles the data transfer rate.

Dynamic Mode Addressing
This mode minimizes the overhead of opening/closing pages in memory banks allowing for row switching to be done less often.

Single Channel	DIMMs are on the same channel. DIMMs in a channel can be identical or completely different. Not all slots need to be populated.
Virtual Single Channel	DIMMs of different memory configurations are on different channels. Odd number of slots can be populated.
Dual Channel	DIMMs of the same memory configuration are on different channels.
Dynamic Mode Addressing	In single channel, requires even number or rows (side of the DIMM) populated. This mode can be enabled with 1 SS, 2 SS or 2 DS.
	In VSC mode, both channels must have identical row structure.

BIOS Setting

Configure the system memory in the Genie BIOS Setting submenu of the BIOS. Refer to chapter 3 for more information.

The table below lists the various optimal operating modes that should be configured for the memory channel operation.

Config	DIMM 1	DIMM 2	DIMM 3	DIMM 4
No memory	E	E	E	E
Single channel A	P	E	E	E
Single channel A	P	P	E	E
Single channel A	E	P	E	E
Single channel B	E	E	P	E
Single channel B	E	E	P	P
Single channel B	E	E	E	P
Virtual single channel	E	P(**)	E	P(**)
Virtual single channel	E	P	P	E
Virtual single channel	E	P(**)	P	P(**)
Virtual single channel	P	E	E	P
Virtual single channel	P(**)	E	P(**)	E
Virtual single channel	p(**)	E	P(**)	P
Virtual single channel	P	P(**)	E	P(**)
Virtual single channel	P(**)	P	P(**)	E
Virtual single channel	P(**)	P(**)	P(**)	P(**)
Dual channel	E	P(*)(2,4)	E	P(*)(2,4)
Dual channel	P(*)(1,3)	E	P(*)(1,3)	E
Dual channel	P(*)(1,3)	P(*)(2,4)	P(*)(1,3)	P(*)(2,4)

Continued on the next page...

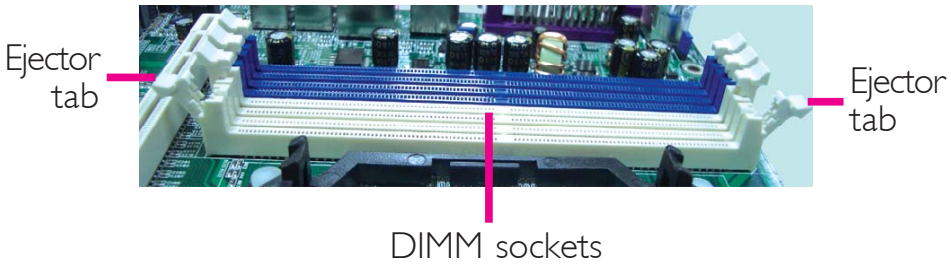
Config	DIMM 1	DIMM 2	DIMM 3	DIMM 4
Dynamic Mode Addressing	E	P(*)(2,4) DS	E	P(*)(2,4) DS
Dynamic Mode Addressing	P(*)(1,3) DS	E	P(*)(1,3) DS	E
Dynamic Mode Addressing	P(*)(1,3) DS	P(*)(2,4) DS	P(*)(1,3) DS	P(*)(2,4) DS
Dynamic Mode Addressing	E	P(*)(2,4) SS	E	P(*)(2,4) SS
Dynamic Mode Addressing	P(*)(1,3) SS	E	P(*)(1,3) SS	E
Dynamic Mode Addressing	P(*)(1,3) SS	P(*)(2,4) SS	P(*)(1,3) SS	P(*)(2,4) SS

P - denotes populated
E - denotes empty
* - denotes DIMMs are identical
** - denotes DIMMs are not identical
SS - denotes Single Sided DIMM
DS - denotes Double Sided DIMM
1, 2, 3 or 4 - denotes the DDR DIMM slot

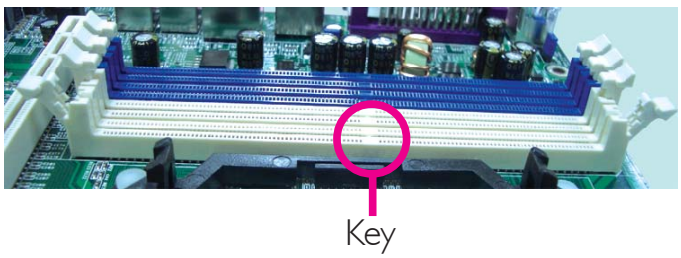
Installing the Memory Module

Note:
The system board used in the following illustrations may not resemble the actual board. These illustrations are for reference only.

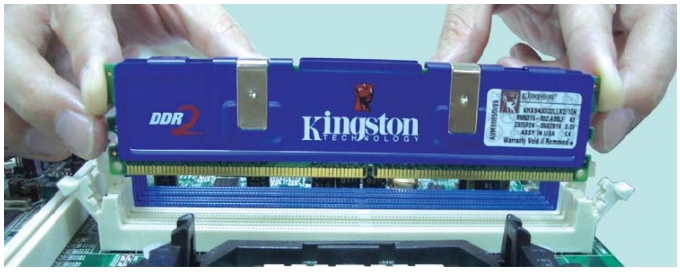
1. Make sure the PC and all other peripheral devices connected to it has been powered down.
2. Disconnect all power cords and cables.
3. Locate the DIMM socket on the system board.
4. Push the "ejector tabs" which are at the ends of the socket to the side.



5. Note how the module is keyed to the socket.



6. Grasping the module by its edges, position the module above the socket with the "notch" in the module aligned with the "key" on the socket. The keying mechanism ensures the module can be plugged into the socket in only one way.



7. Seat the module vertically, pressing it down firmly until it is completely seated in the socket.

8. The ejector tabs at the ends of the socket will automatically snap into the locked position to hold the module in place.

CPU

Overview

The system board is equipped with a surface mount LGA 775 socket. This socket is exclusively designed for installing a LGA 775 packaged Intel CPU.

Important:

1. Before you proceed, make sure (1) the LGA775 socket comes with a protective cap, (2) the cap is not damaged and (3) the socket's contact pins are not bent. If the cap is missing or the cap and/or contact pins are damaged, contact your dealer immediately.

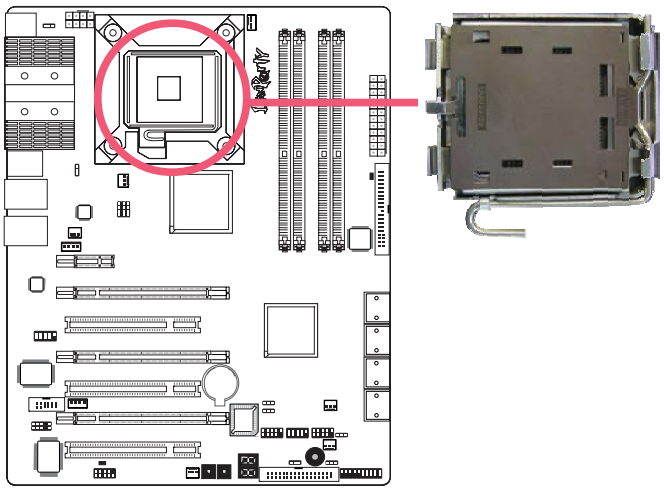
2. Make sure to keep the protective cap. RMA requests will be accepted and processed only if the LGA775 socket comes with the protective cap.

Installing the CPU

1. Make sure the PC and all other peripheral devices connected to it has been powered down.

2. Disconnect all power cords and cables.

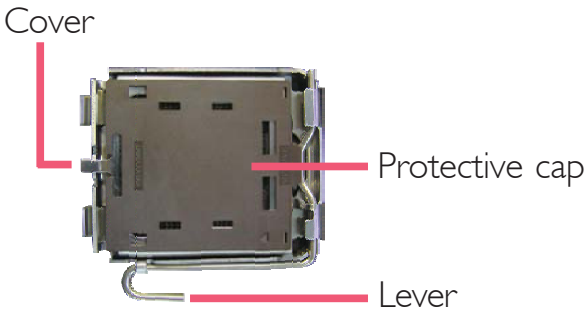
3. Locate the LGA 775 CPU socket on the system board.



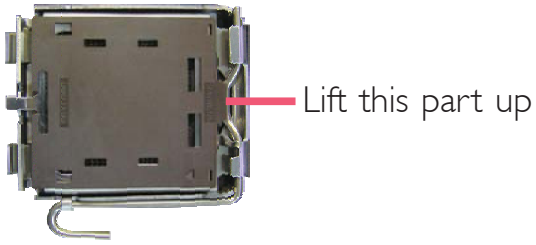
Important:

The CPU socket must not come in contact with anything other than the CPU. Avoid unnecessary exposure. Remove the protective cap only when you are about to install the CPU.

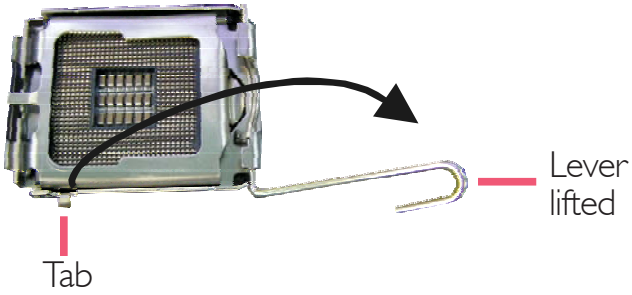
4. The CPU socket comes with a cover that is attached with a removable protective cap. The cap is used to protect the CPU socket against dust and harmful particles. Remove the protective cap only when you are about to install the CPU.



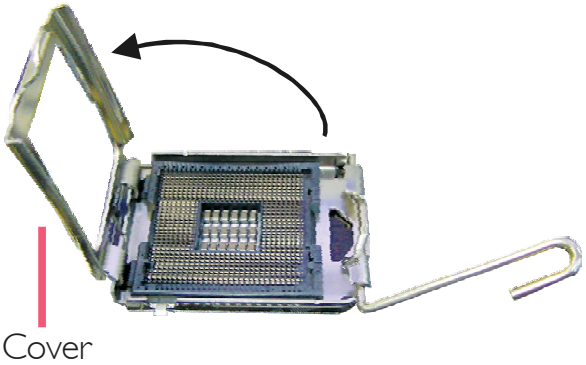
5. Lift the protective cap from the location pointed below to detach the cap from the cover.



6. Unlock the socket by pushing the lever down, moving it away from the side tab of the socket, then lifting it up.

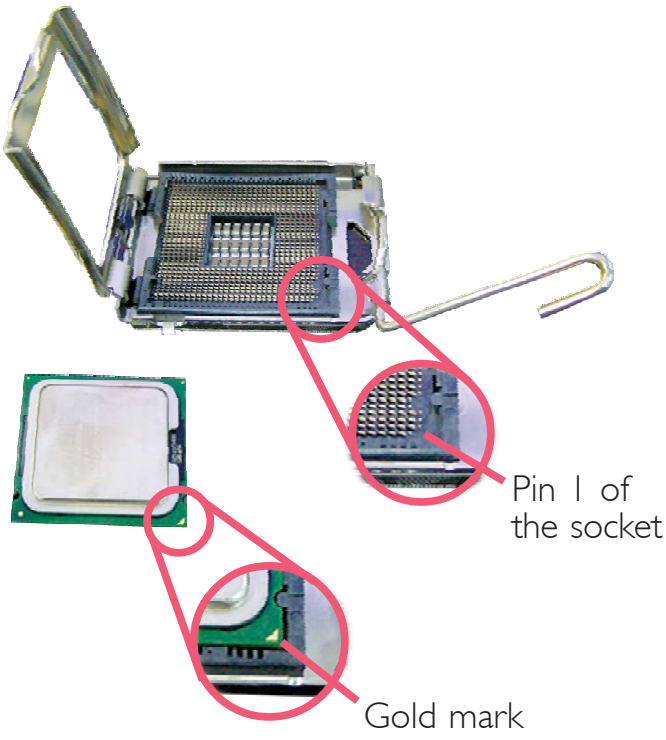


7. Now lift the cover.



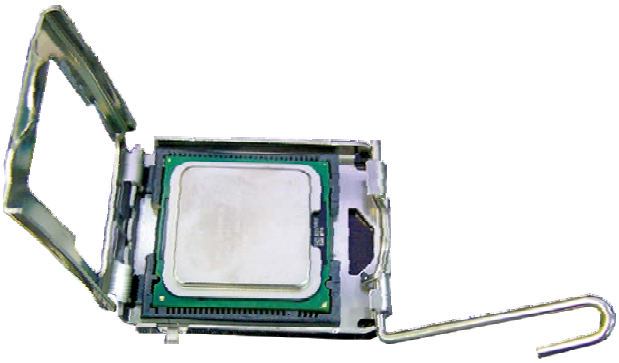
8. Position the CPU above the socket. The gold mark on the CPU must align with pin 1 of the CPU socket.

Important:
Handle the CPU by its edges and avoid touching the pins.

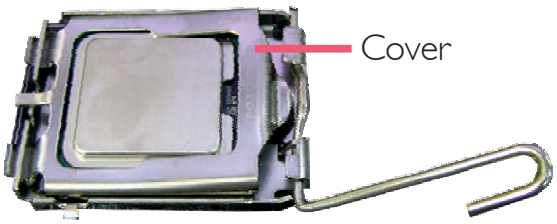


9. Insert the CPU into the socket until it is seated in place. The CPU will fit in only one orientation and can easily be inserted without exerting any force.

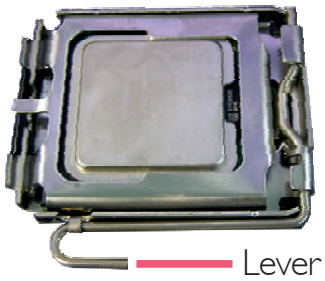
Important:
Do not force the CPU into the socket. Forcing the CPU into the socket may bend the pins and damage the CPU.



10. Once the CPU is in place, move the cover down.



11. Push the lever down to lock the socket. The lever should hook onto the side tab to indicate that the CPU is completely secured in the socket.



Installing the Fan and Heat Sink

The CPU must be kept cool by using a CPU fan with heat sink. Without sufficient air circulation across the CPU and heat sink, the CPU will overheat damaging both the CPU and system board.

Note:

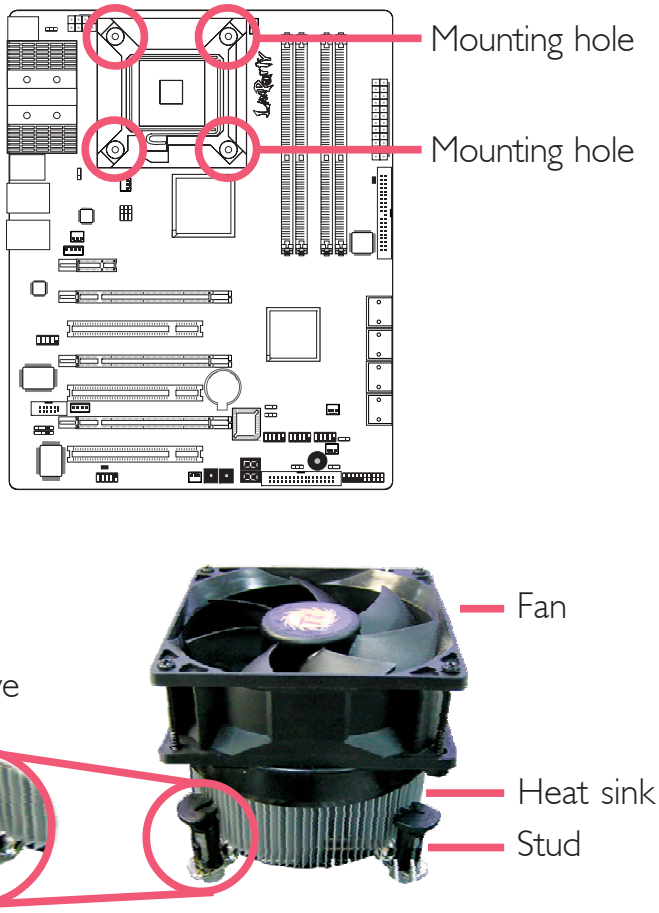
- *Use only certified fan and heat sink.*
- *The fan and heat sink package usually contains the fan and heat sink assembly, and an installation guide. If the installation procedure in the installation guide differs from the one in this section, please follow the installation guide in the package.*

1. Before you install the fan / heat sink, you must apply a thermal paste onto the top of the CPU. The thermal paste is usually supplied when you purchase the CPU or fan heat sink assembly. Do not spread the paste all over the surface. When you later place the heat sink on top of the CPU, the compound will disperse evenly.

   Do not apply the paste if the fan / heat sink already has a patch of thermal paste on its underside. Peel the strip that covers the paste before you place the fan / heat sink on top of the CPU.

2. Place the heat sink on top of the CPU. The 4 studs around the heat sink which are used to secure the heat sink onto the system board must match the 4 mounting holes around the socket.

   Position each stud so that the groove faces the heat sink then push it down firmly until it clicks into place.



Note:
You will not be able to secure the fan and heat sink assembly in place if the groove is not facing the heat sink.

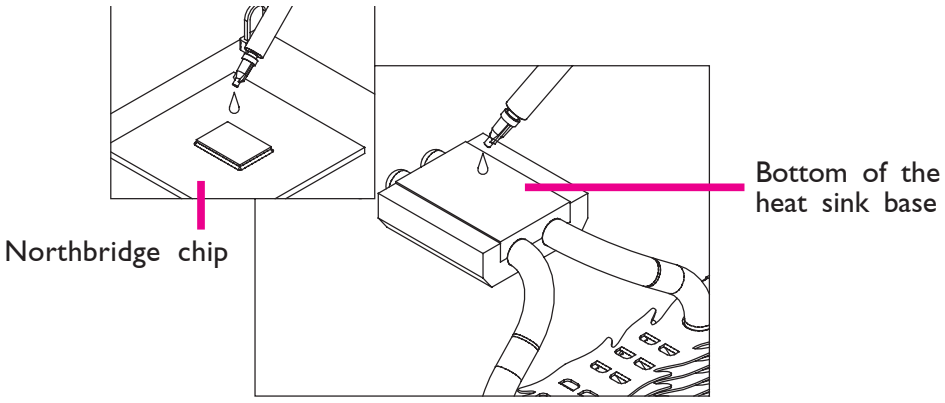
3. Connect the CPU fan's cable connector to the CPU fan connector on the system board.

Note:
LP UT series provides the option of using the Transpiper heat sink. However, instead of using the push-pin type of CPU heat sink / fan assembly, opt for an assembly that uses mounting screws. Refer to the Transpiper Heat Sink section for details.

Northbridge Heat Sink

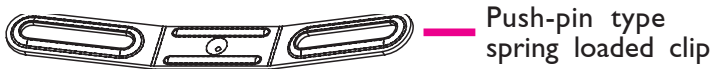
The Northbridge must be kept cool by using a heat sink. The heat sink will dissipate heat generated by the Northbridge. Without the heat sink, the Northbridge will overheat damaging both the Northbridge and the system board.

1. Apply a thin layer of thermal paste on the northbridge chip and at the bottom of the heat sink base.

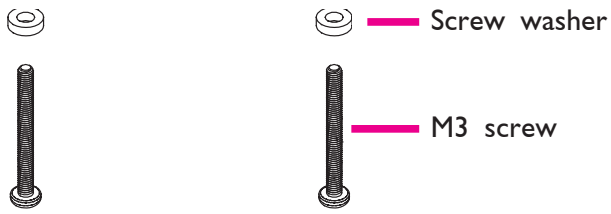


2. Now place the heat sink on top of the northbridge.

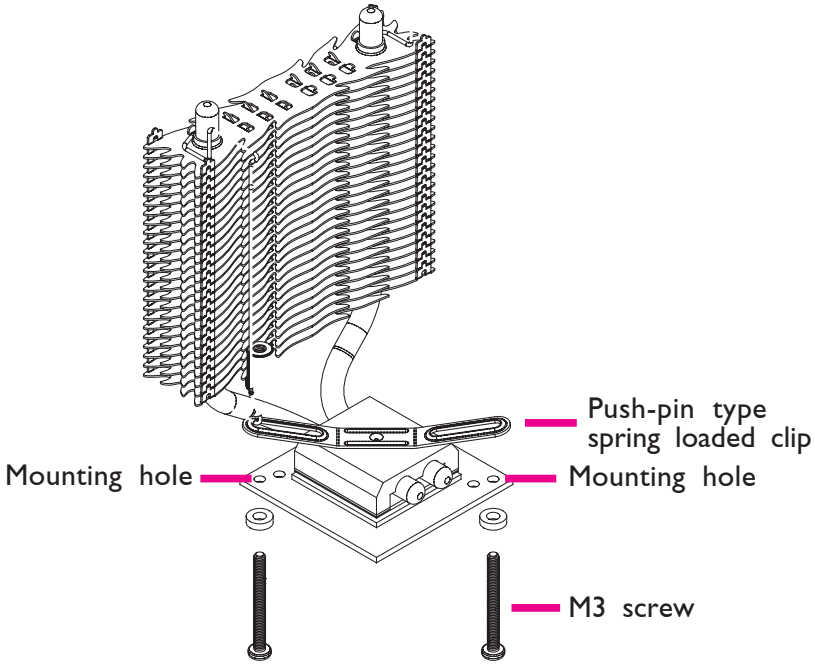
3. Position the push-pin type spring loaded clip on the heat sink making sure the protrusion in the middle of the clip fits into the notch located in the middle of the heat sink.



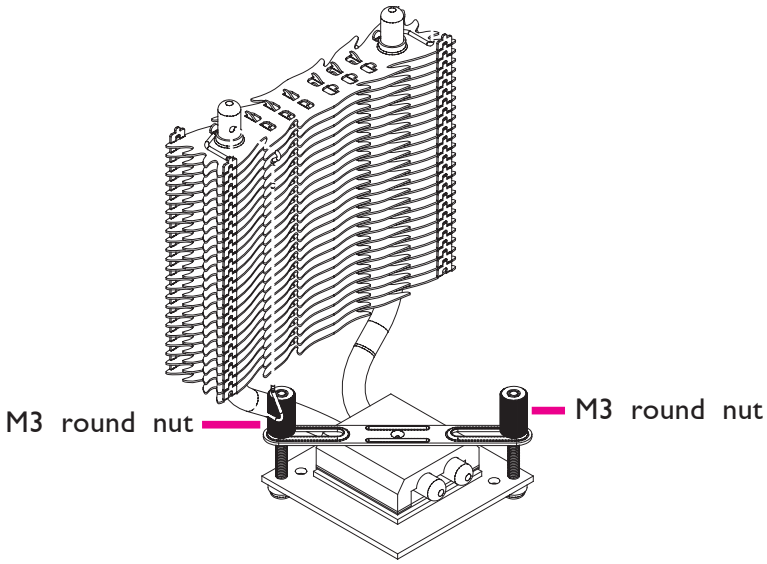
4. Insert a screw washer into each M3 screw.



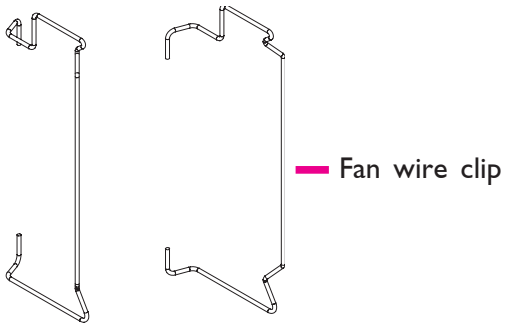
5. The 2 mounting holes diagonally positioned near the corners of the northbridge are for the M3 screws. Insert each M3 screw into the mounting holes, from the bottom through the top of the system board, making sure the screws also go through the ends of the spring loaded clip.



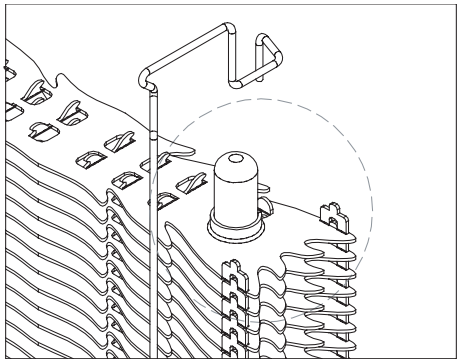
6. Fasten a nut on top of each M3 screw.



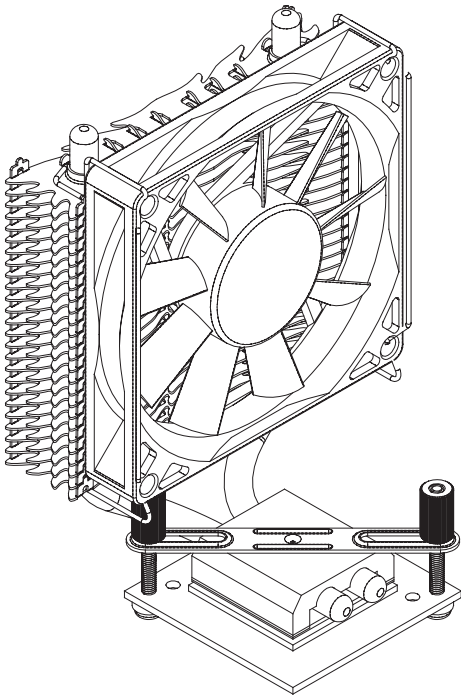
7. The provided fan wire clips are used to secure a cooling fan.



8. Insert the ends of the clips to the corresponding holes on the heat sink (circled in the illustration) so that these clips are hooked onto the heat sink.



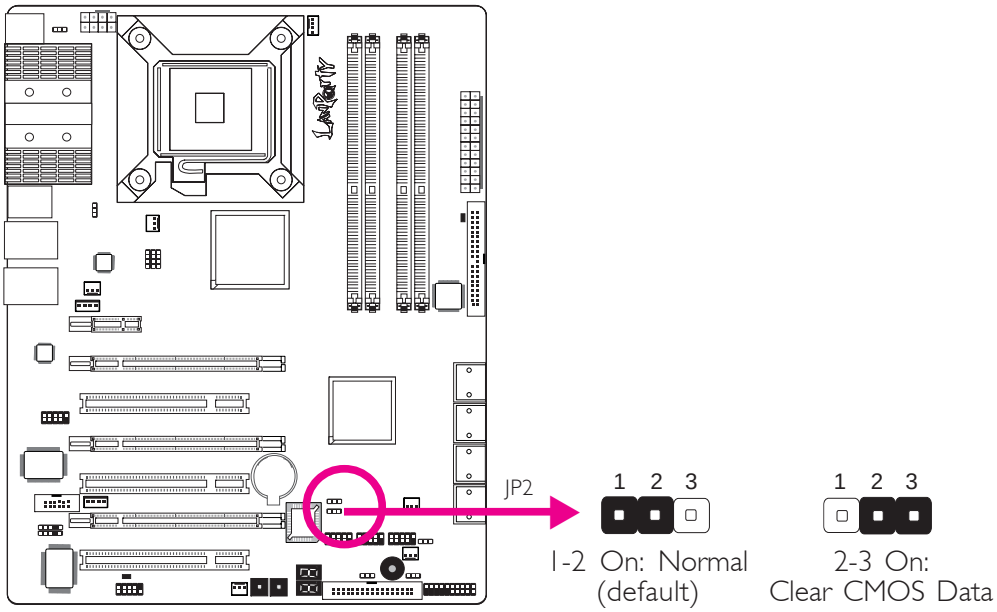
9. Position an 8cm cooling fan to the heat sink then secure the fan by moving the fan wire clips toward the center.



Jumper Settings

Clear CMOS Data

Clearing CMOS Data using JP2



If you encounter the following,

a) CMOS data becomes corrupted.
b) You forgot the supervisor or user password.
c) The overclocked settings in the BIOS resulted to the system's instability or caused system boot up problems.

you can reconfigure the system with the default values stored in the ROM BIOS.

To load the default values stored in the ROM BIOS, please follow the steps below.

1. Power-off the system then unplug the power cord.
2. Set JP2 pins 2 and 3 to On. Wait for a few seconds and set JP2 back to its default setting, pins 1 and 2 On.
3. Now plug the power cord then power-on the system.

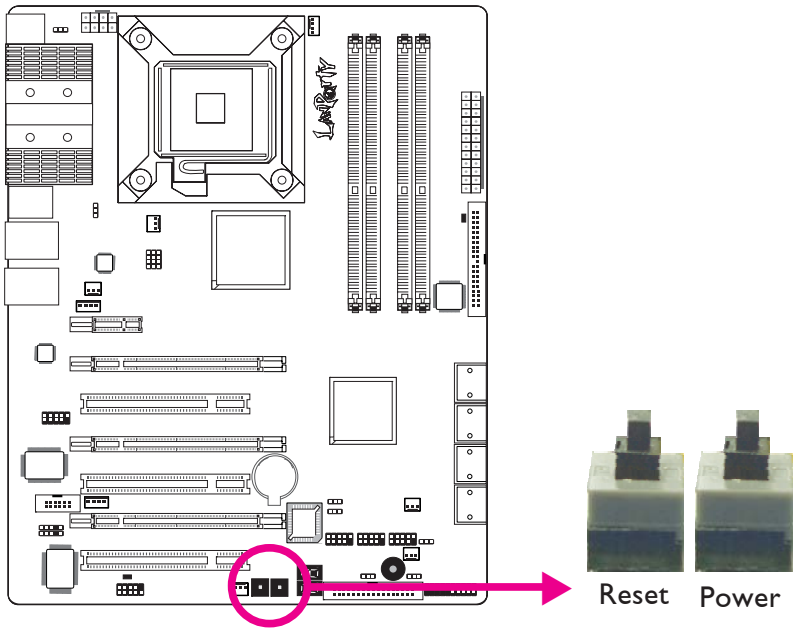
Clearing CMOS Data using the EZ Clear® Function

EZ Clear® bypasses the manual process of using a jumper to clear the CMOS by simply using the reset and power buttons.

Important:
EZ Clear® is supported only if standby power is present in the system.

To use EZ Clear®:

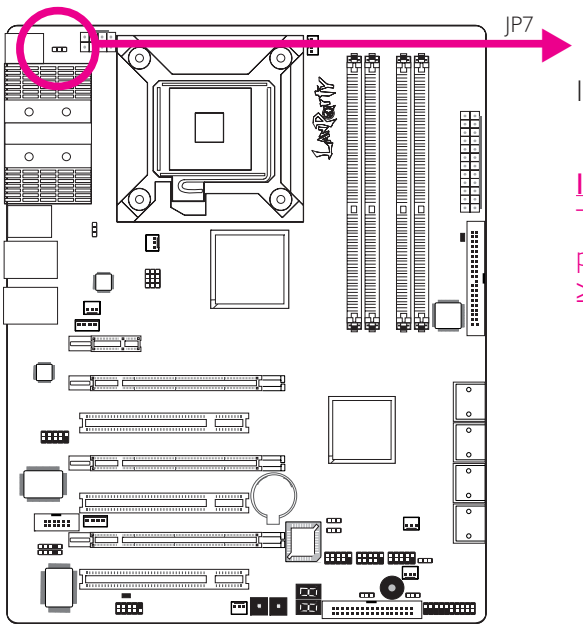
1. Make sure the standby power is present.
2. Using the EZ touch switches on the system board, first press the Reset button then the Power button simultaneously for approximately 4 seconds.



If the system board is already enclosed in a chassis, apply the same method using the Reset button and Power button located at the front panel of the chassis.

3. After 4 seconds, release the power button first then the Reset button.
4. The CMOS will restore the clock settings back to their default values.

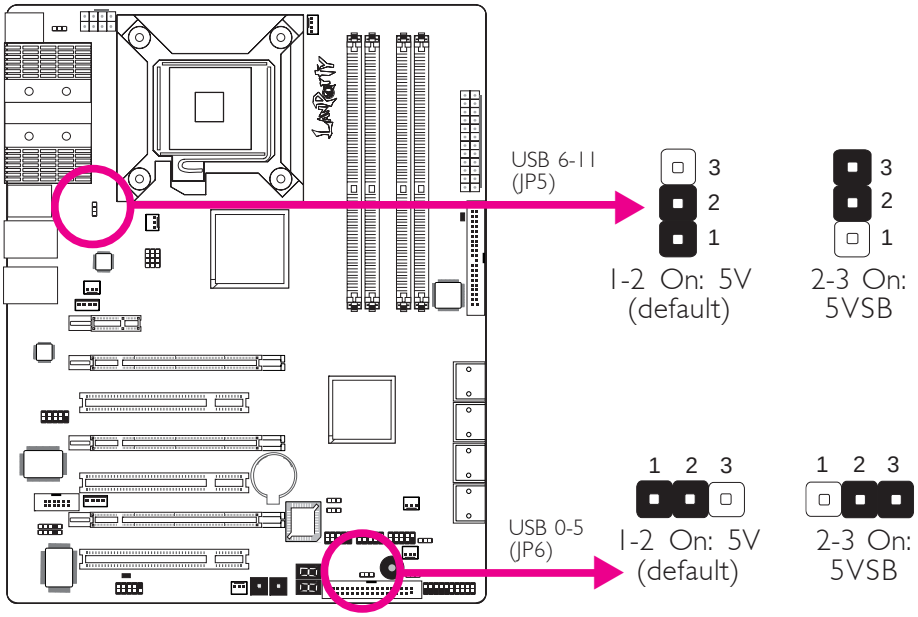
PS/2 Power Select



Important:
The 5VSB power source of your power supply must support ≥720mA.

Selecting 5VSB will allow you to use the PS/2 keyboard or PS/2 mouse to wake up the system.

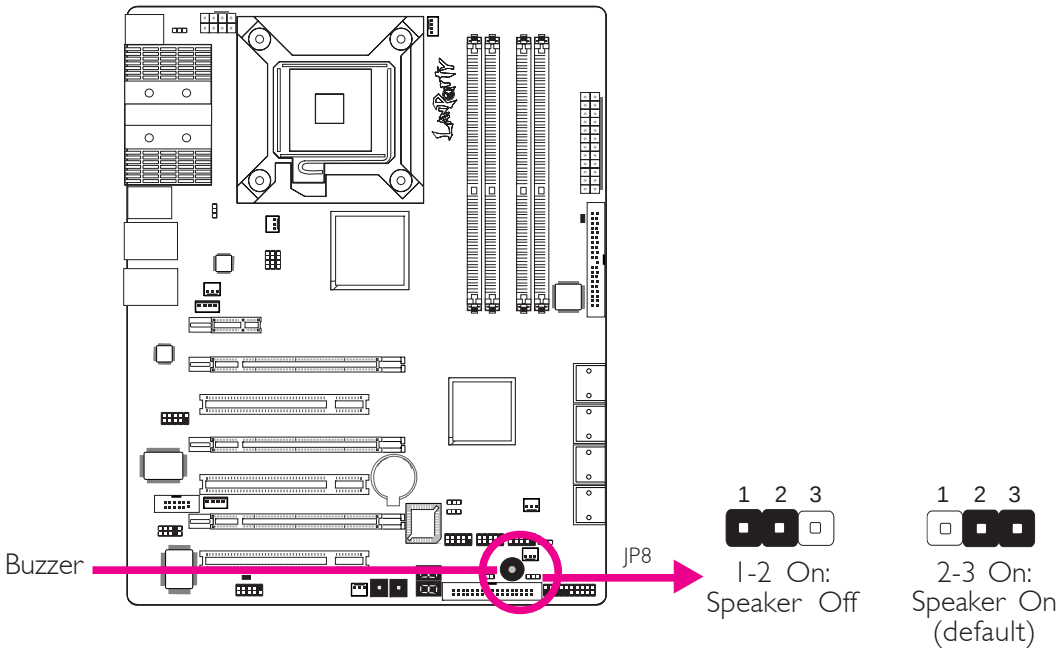
USB Power Select



Selecting 5VSB will allow you to use the USB keyboard or USB mouse to wake up the system..

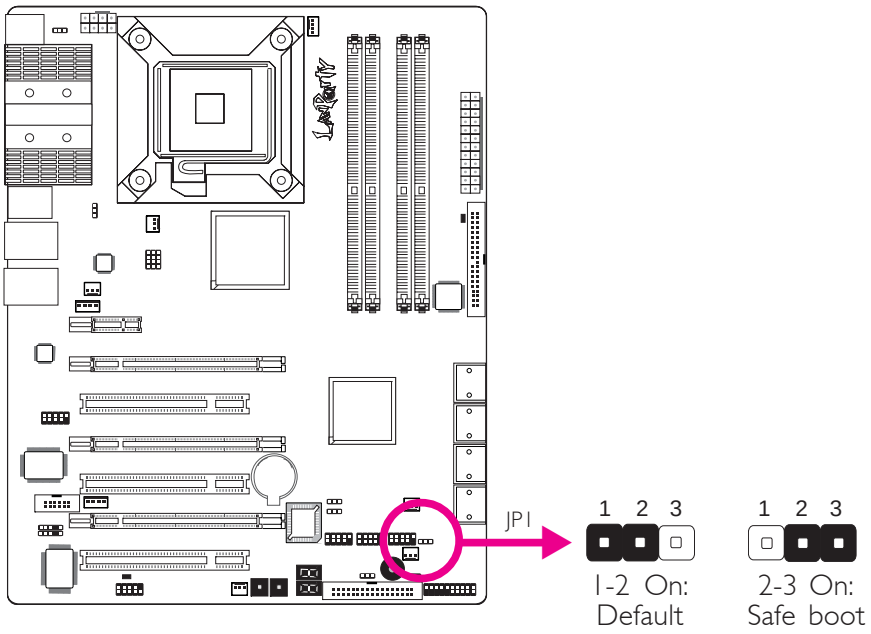
Important:
The 5VSB power source of your power supply must support ≥1.5A (2 devices) or ≥2A (3 or more devices).

Speaker On/Off Select



The system board is equipped with a buzzer which serves as the PC's speaker. By default the buzzer is "on" allowing you to hear the system's beep messages and warnings. If you intend to use an external speaker, turn this function off by setting JP8 pins 1 and 2 to On.

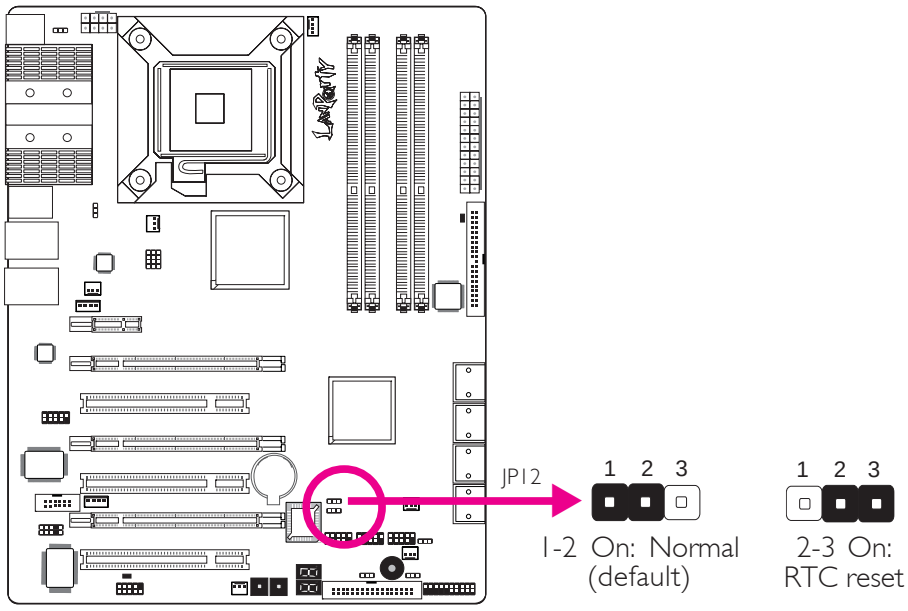
Safe Boot



This jumper is used to safely reboot the system whenever the system hangs and you are unable to restart the system.

1. Power-off the system then unplug the power cord.
2. Set pins 2 and 3 to On. Wait for a few seconds then set the jumper back to its default setting, pins 1 and 2 On.
3. Plug the power cord then power-on the system. The system will reboot normally without losing all data stored in the CMOS.

Secondary RTC Reset

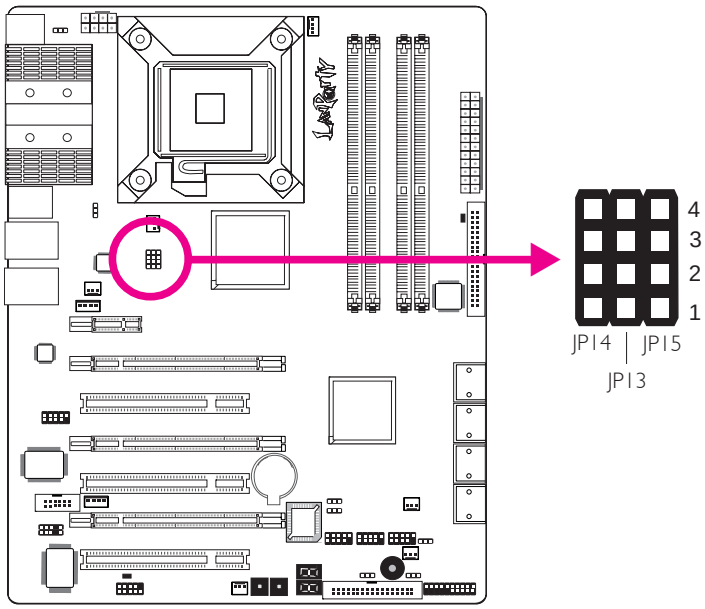


When the RTC battery is removed, this jumper resets the manageability register bits in the RTC.

Note:

1. *The SRTCRST# input must always be high when all other RTC power planes are on.*
2. *In the case where the RTC battery is dead or missing on the platform, the SRTCRST# pin must rise before the RSMRST# pin.*

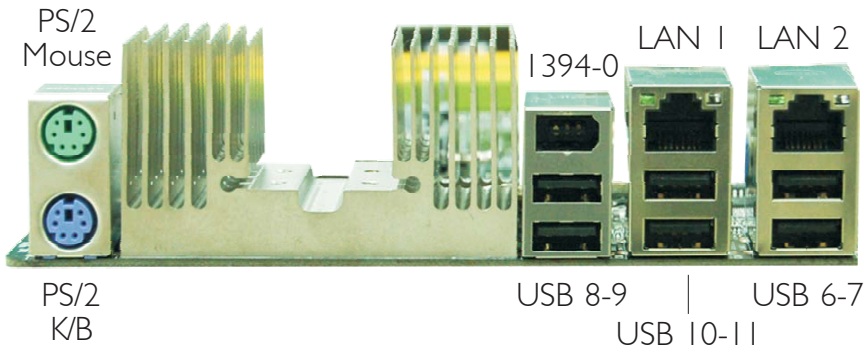
CPU FSB Select



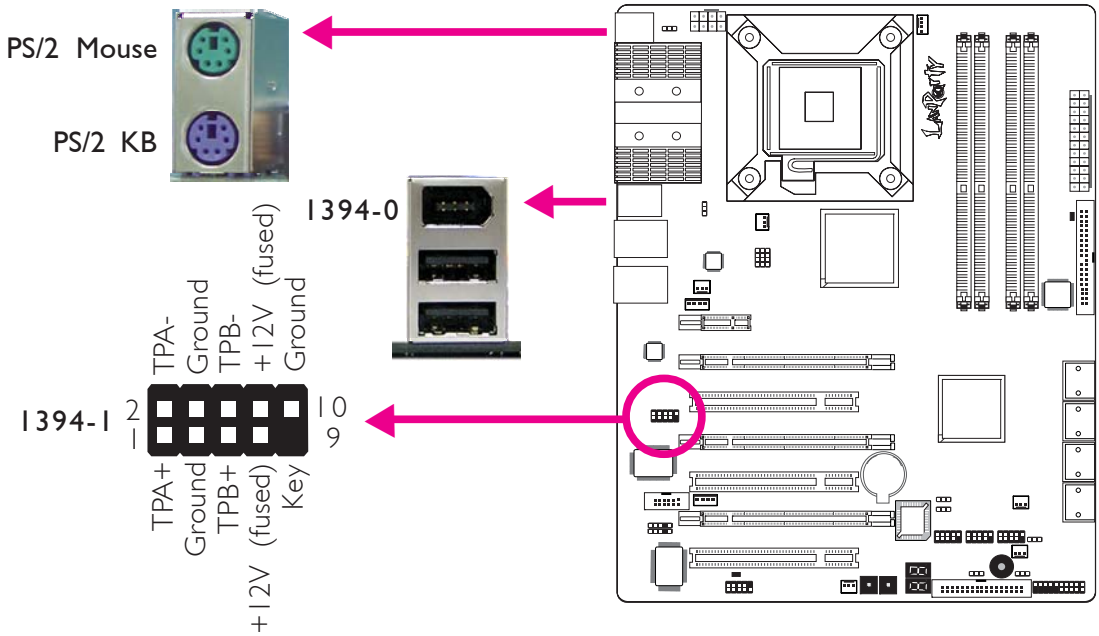
By default, JP13 to JP15 are set to pins 1 and 2 On. This setting will allow the system to automatically run according to the CPU's FSB. If you want to change the setting, please refer to the table below.

	By CPU	FSB 800	FSB 1066	FSB 1333
JP14	1-2 On	3-4 On	2-3 On	2-3 On
JP13	1-2 On	2-3 On	2-3 On	2-3 On
JP15	1-2 On	2-3 On	2-3 On	3-4 On

Rear Panel I/O Ports



PS/2 Ports and IEEE 1394 Ports



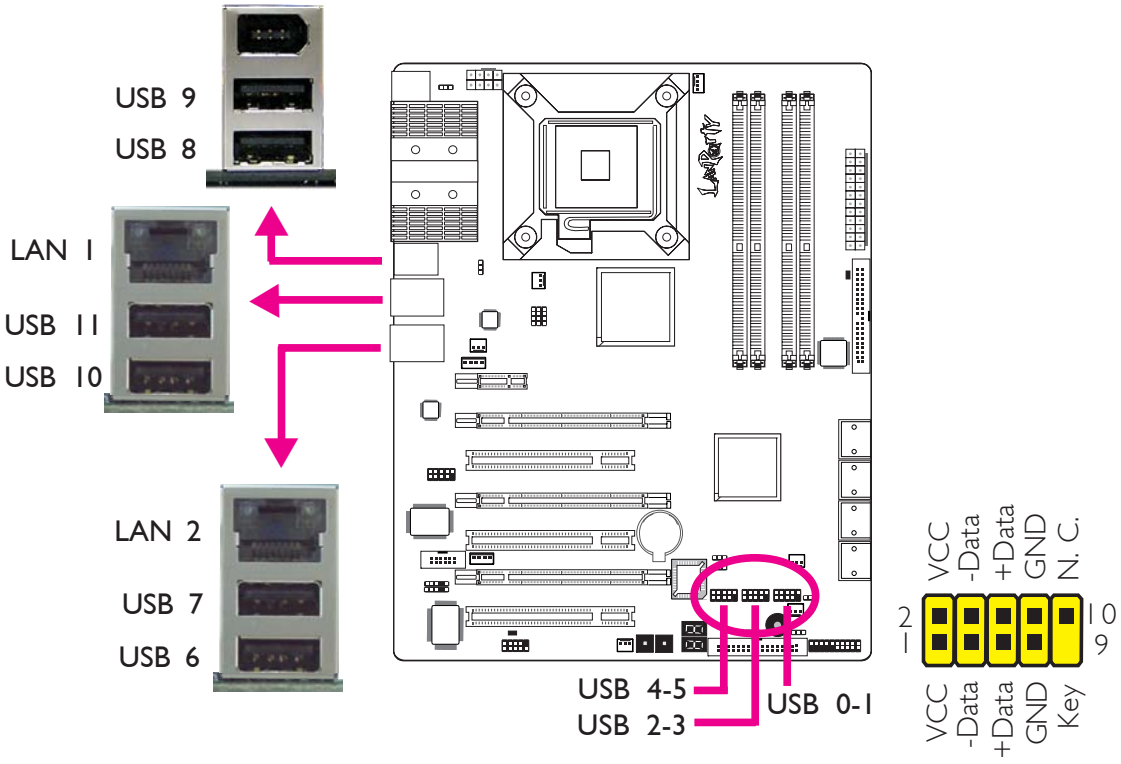
PS/2 Mouse and PS/2 Keyboard Ports

These ports are used to connect a PS/2 mouse and a PS/2 keyboard.

IEEE 1394 Ports

The IEEE 1394-0 port is used to connect audio/video devices or storage peripherals. The 10-pin connector allows you to connect an additional 1394 port. Your 1394 port may come mounted on a card-edge bracket. Install the card-edge bracket to an available slot at the rear of the system chassis then connect the 1394 port cable to this connector.

USB Ports and LAN Ports



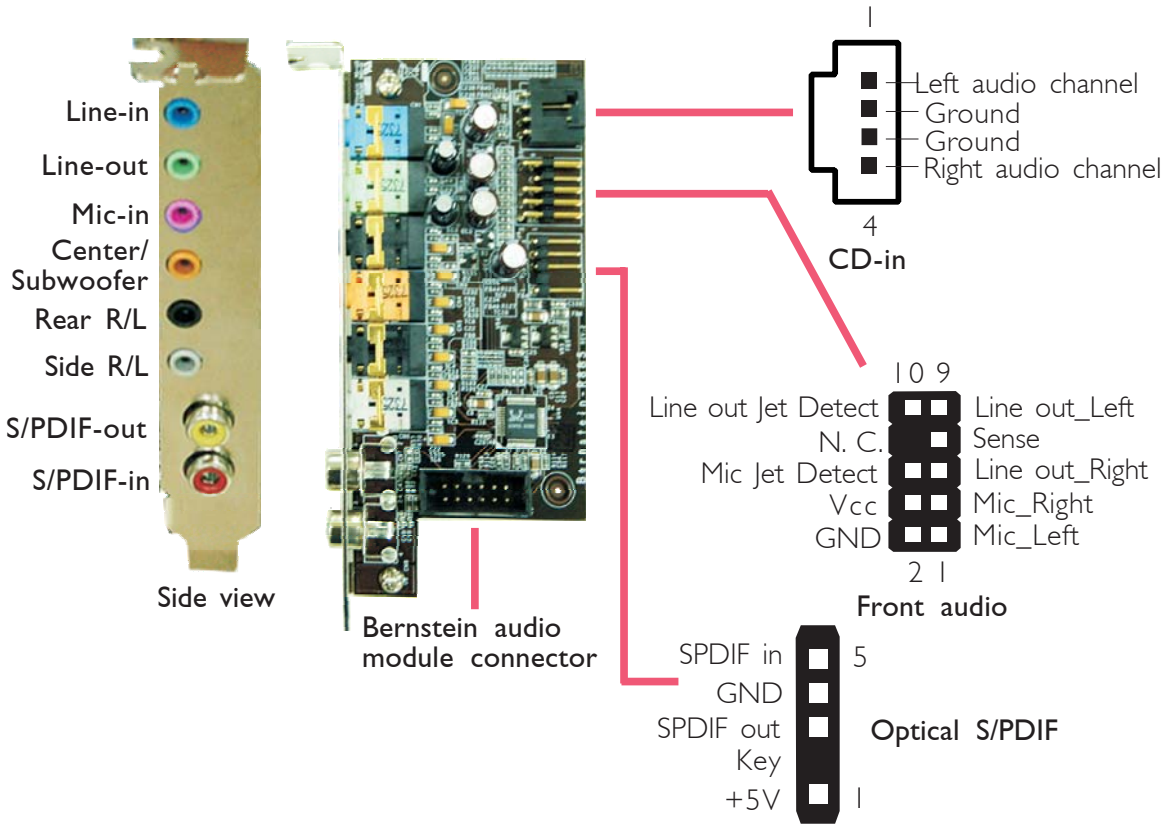
USB Ports

The USB ports are used to connect USB 2.0/1.1 devices. The 10-pin connectors allow you to connect 6 additional USB 2.0/1.1 ports. Your USB ports may come mounted on a card-edge bracket. Install the card-edge bracket to an available slot at the rear of the system chassis then connect the USB port cables to these connectors.

LAN Ports

The LAN ports allow the system board to connect to a local area network by means of a network hub.

Bernstein Audio Module



Line-in Jack (Light Blue)

This jack is used to connect any audio devices such as Hi-fi set, CD player, tape player, AM/FM radio tuner, synthesizer, etc.

Line-out Jack (Lime)

This jack is used to connect to the front right and front left speakers of the audio system.

Mic-in Jack (Pink)

This jack is used to connect an external microphone.

Center/Subwoofer Jack (Orange)

This jack is used to connect to the center and subwoofer speakers of the audio system.

Rear Right/Left Jack (Black)

This jack is used to connect to the rear right and rear left speakers of the audio system.

Side Right/Left Jack (Gray)

This jack is used to connect to the side left and side right speakers of the audio system.

Coaxial RCA S/PDIF-in and SPDIF-out Jacks

These jacks are used to connect external audio output devices using coaxial S/PDIF cables.

CD-in Connector

The CD-in connector is used to receive audio from a CD-ROM drive, TV tuner or MPEG card.

Front Audio Connector

The front audio connector is used to connect to the line-out and mic-in jacks that are at the front panel of your system.

Optical S/PDIF Connector

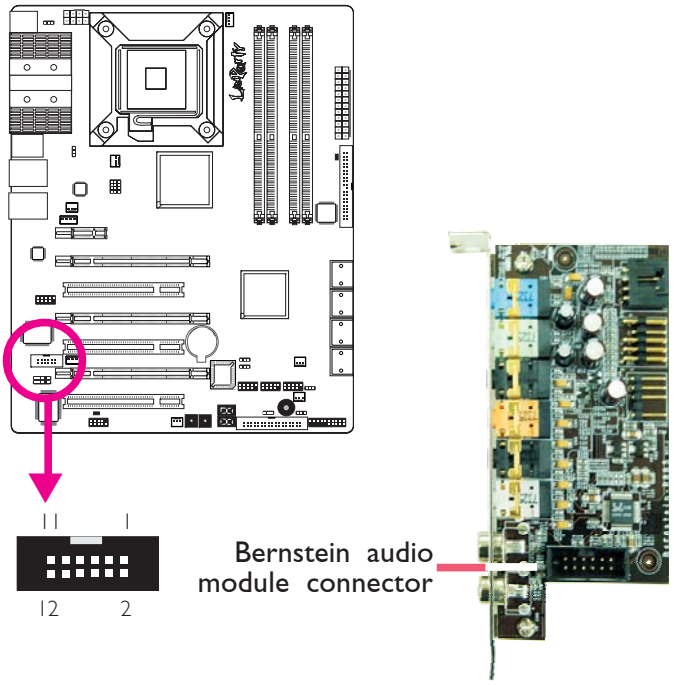
The optical S/PDIF connector is used to connect an external audio output device using an optical S/PDIF cable.

Important:
DO NOT use optical S/PDIF and coaxial RCA S/PDIF at the same time.

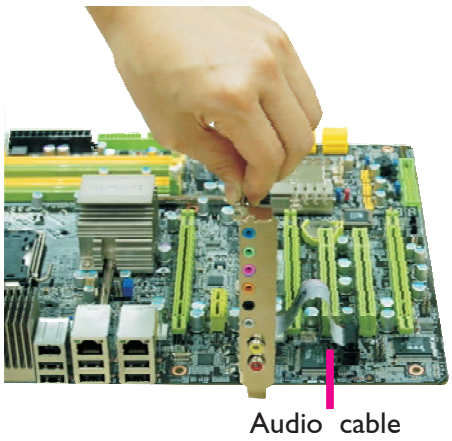
Installing the Bernstein Audio Module

1. The Bernstein audio module connects to the system board by means of the provided audio cable.

2. Insert one end of the cable to the Bernstein audio connector on the system board and the other end to the corresponding connector on the audio module.

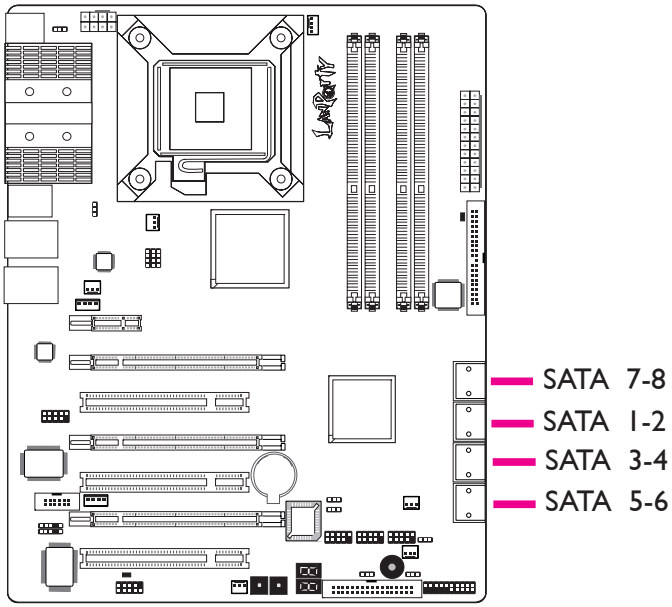


3. The length of the audio cable provides the option and flexibility of installing the module on any available expansion bracket slot at the rear of the system chassis. Remove the screw of the bracket where you want the audio module installed then remove the bracket. Place the Bernstein audio module on the expansion bracket slot then secure the module by replacing the bracket screw you removed earlier.



I/O Connectors

Serial ATA Connectors



The Serial ATA (SATA) connectors are used to connect Serial ATA drives. Connect one end of the Serial ATA cable to a Serial ATA connector and the other end to your Serial ATA device.

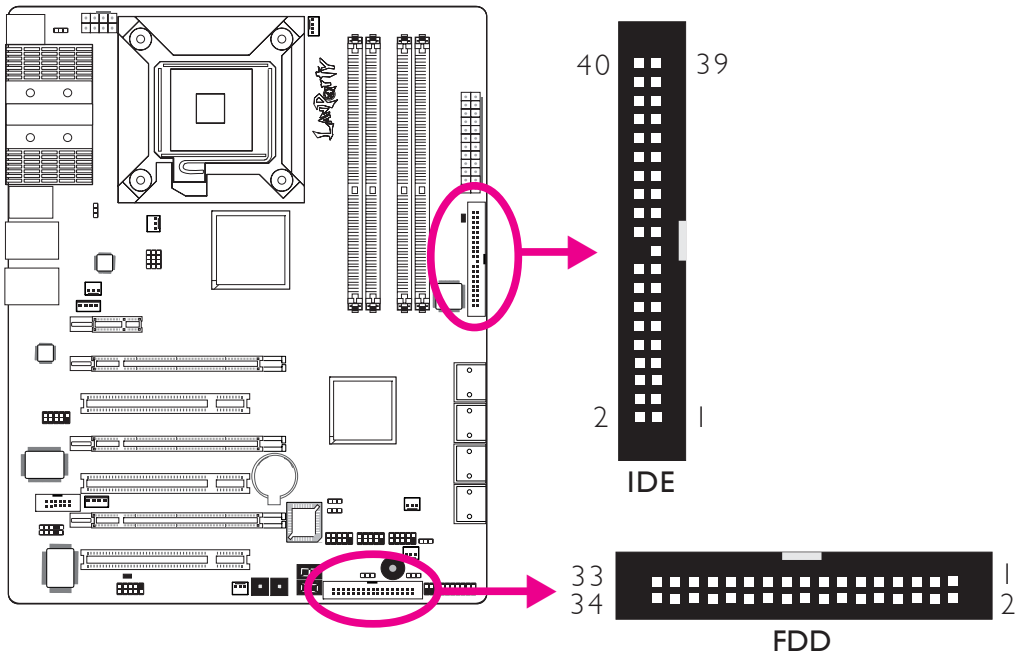
ICH9R supports SATA 1 to SATA 6.

JMB363 supports SATA 7 and SATA 8.

Configuring RAID

Refer to the RAID chapter in this manual for more information about creating RAID on Serial ATA drives.

Floppy Disk Drive Connector and IDE Connector



Floppy Disk Drive Connector

The floppy disk drive connector is used to connect a floppy drive. Insert one end of the floppy cable into this connector and the other end-most connector to the floppy drive. The colored edge of the cable should align with pin 1 of this connector.

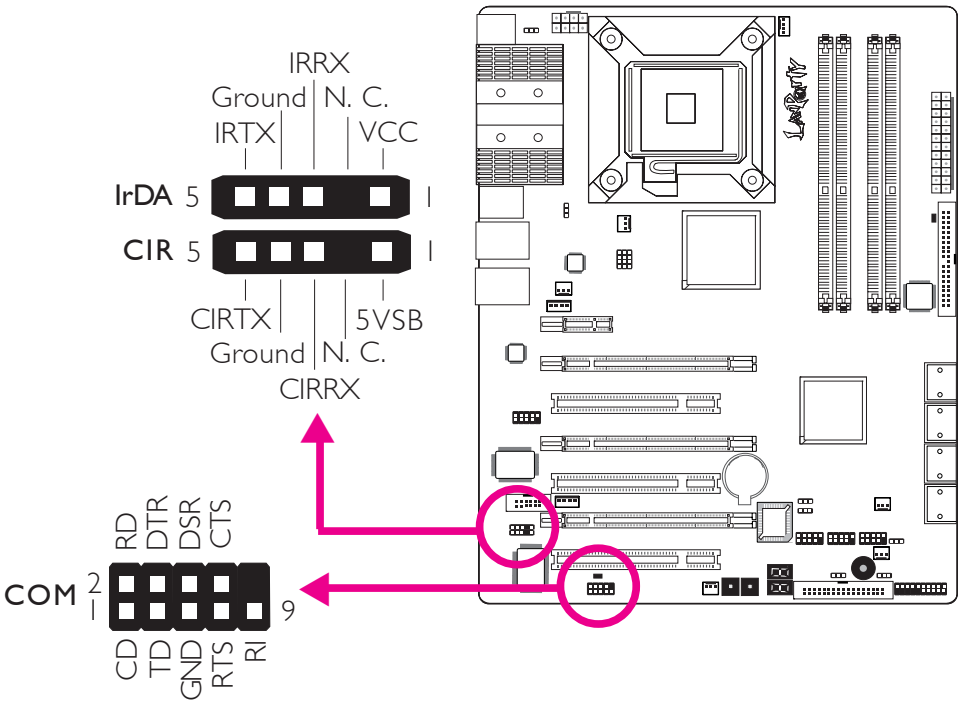
IDE Disk Drive Connector

The IDE disk drive connector is used to connect 2 IDE disk drives. An IDE cable have 3 connectors on them, one that plugs into this connector and the other 2 connects to IDE devices. The connector at the end of the cable is for the Master drive and the connector in the middle of the cable is for the Slave drive. The colored edge of the cable should align with pin 1 of this connector.

Note:

When using two IDE drives, one must be set as the master and the other as the slave. Follow the instructions provided by the drive manufacturer for setting the jumpers and/or switches on the drives.

IrDA, CIR and Serial (COM) Connectors



IrDA and CIR Connectors

These connectors are used to connect an IrDA module and/or CIR module.

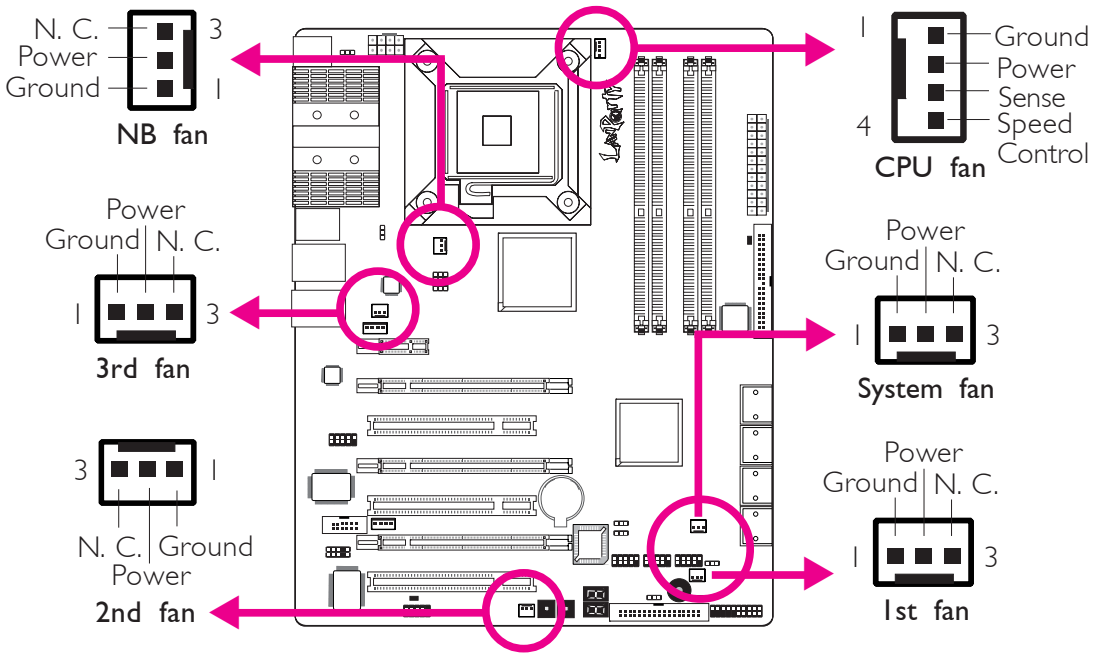
Note:
The sequence of the pin functions on some IrDA/CIR cable may be reversed from the pin function defined on the system board. Make sure to connect the cable connector to the IrDA/CIR connector according to their pin functions.

You may need to install the proper drivers in your operating system to use the IrDA/CIR function. Refer to your operating system's manual or documentation for more information.

Serial (COM) Connector

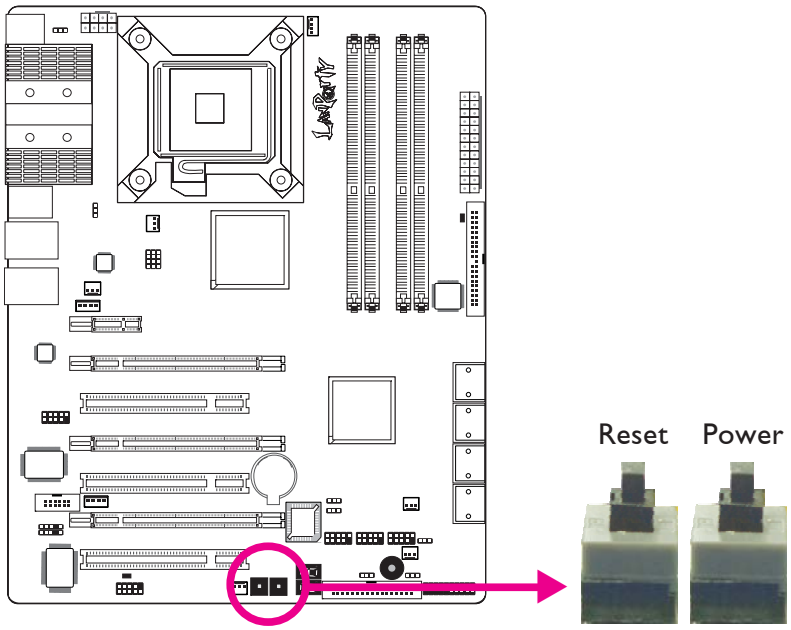
The serial (COM) connector is used to connect modems, serial printers, remote display terminals, or other serial devices. Your COM port may come mounted on a card-edge bracket. Install the card-edge bracket to an available slot at the rear of the system chassis then connect the serial port cable to this connector. The colored edge of the cable should align with pin 1 of this connector.

Cooling Fan Connectors



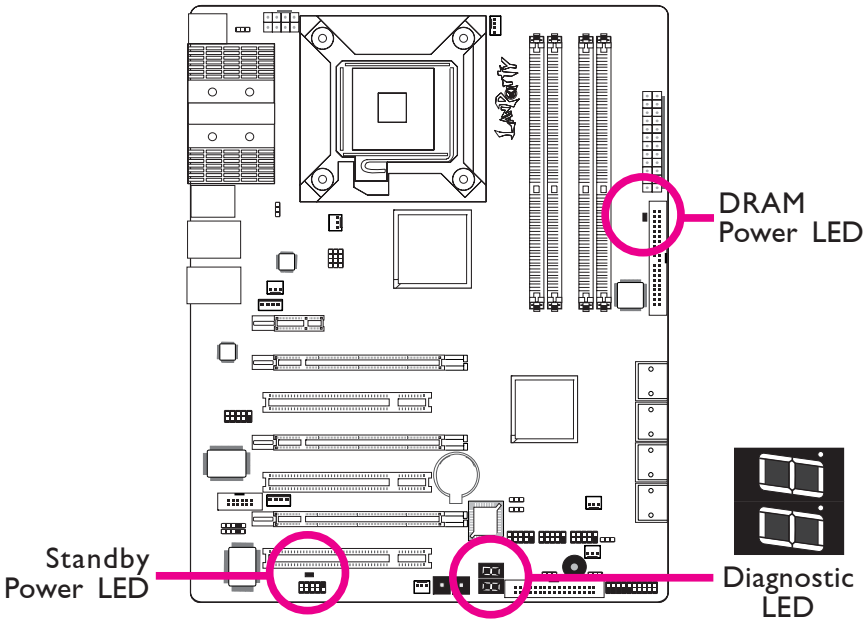
These fan connectors are used to connect cooling fans. Cooling fans will provide adequate airflow throughout the chassis to prevent overheating the CPU and system board components.

EZ Touch Switches



The presence of the power switch and reset switch on the system board are user-friendly especially to DIY users. They provide convenience in powering on and/or resetting the system while fine tuning the system board before it is installed into the system chassis.

LEDs



DRAM Power LED

This LED will light when the system's power is on.

Standby Power LED

This LED will light when the system is in the standby mode.

Diagnostic LED

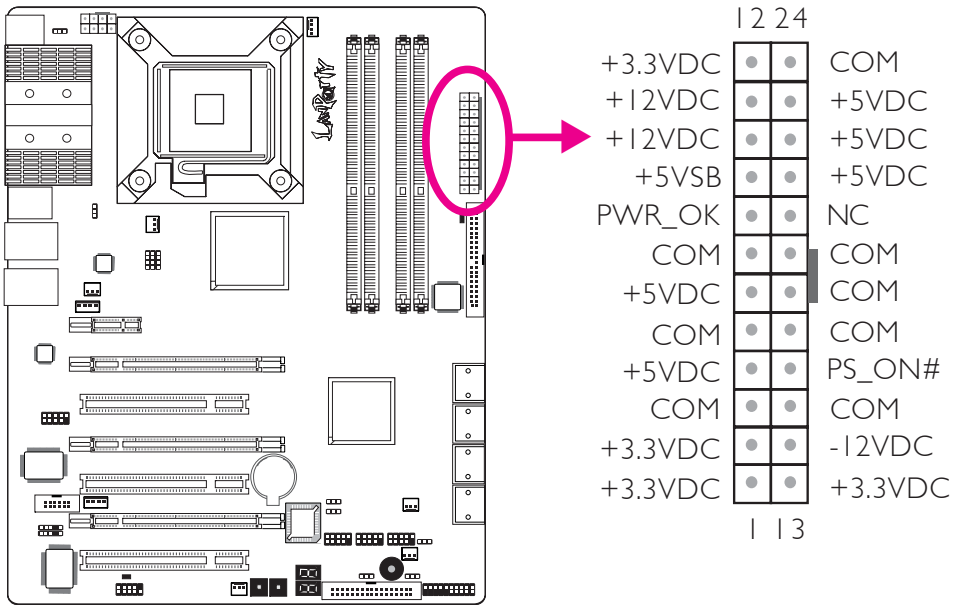
The Diagnostic LED displays POST codes. POST (Power-On Self Tests) which is controlled by the BIOS is performed whenever you power-on the system. POST will detect the status of the system and its components. Each code displayed on the LED corresponds to a certain system status.

Warning:
When the DRAM Power LED and/or Standby Power LED lit red, it indicates that power is present on the DIMM sockets and/or PCI slots. Power-off the PC then unplug the power cord prior to installing any memory modules or add-in cards. Failure to do so will cause severe damage to the motherboard and components.

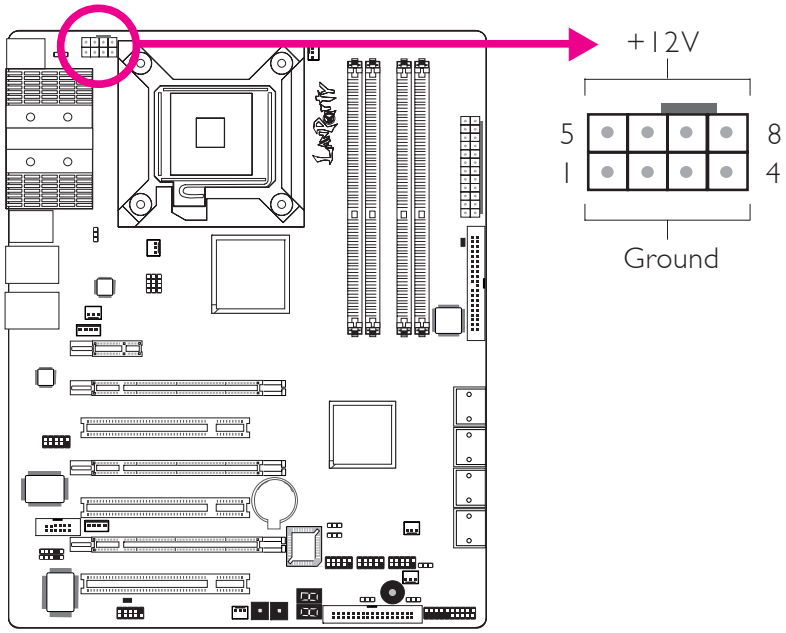
English

Power Connectors

Use a power supply that complies with the ATX12V Power Supply Design Guide Version 1.1. An ATX12V power supply unit has a standard 24-pin ATX main power connector that must be inserted into this connector.

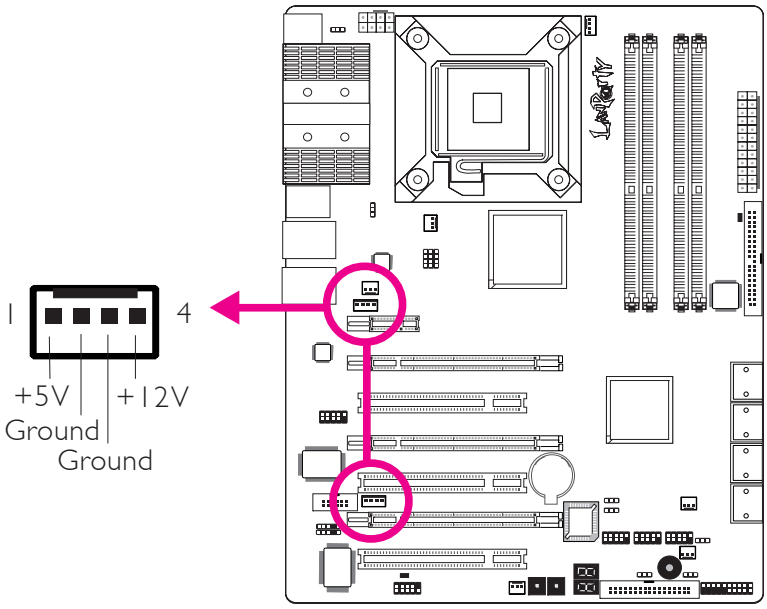


Your power supply unit may come with an 8-pin or 4-pin +12V power connector. The +12V power enables the delivery of more +12VDC current to the processor's Voltage Regulator Module (VRM). If available, it is preferable to use the 8-pin power; otherwise connect a 4-pin power to this connector.



The power connectors from the power supply unit are designed to fit the 24-pin and 8-pin connectors in only one orientation. Make sure to find the proper orientation before plugging the connectors.

The FDD-type power connectors are additional power connectors. If you are using more than one graphics cards, we recommend that you plug power cables from your power supply unit to the 5V/12V power connectors. This will provide more stability to the entire system. The system board will still work even if the additional power connector is not connected.



The system board requires a minimum of 300 Watt power supply to operate. Your system configuration (CPU power, amount of memory, add-in cards, peripherals, etc.) may exceed the minimum power requirement. To ensure that adequate power is provided, **we strongly recommend that you use a minimum of 400 Watt (or greater) power supply.**

Important:
Insufficient power supplied to the system may result in instability or the add-in boards and peripherals not functioning properly. Calculating the system's approximate power usage is important to ensure that the power supply meets the system's consumption requirements.

Restarting the PC

Normally, you can power-off the PC by:

1. Pressing the power button at the front panel of the chassis.
   or
2. Pressing the power switch that is on the system board (note: not all system boards come with this switch).

If for some reasons you need to totally cut off the power supplied to the PC, switch off the power supply or unplug the power cord. Take note though that if you intend to restart it at once, please strictly follow the steps below.

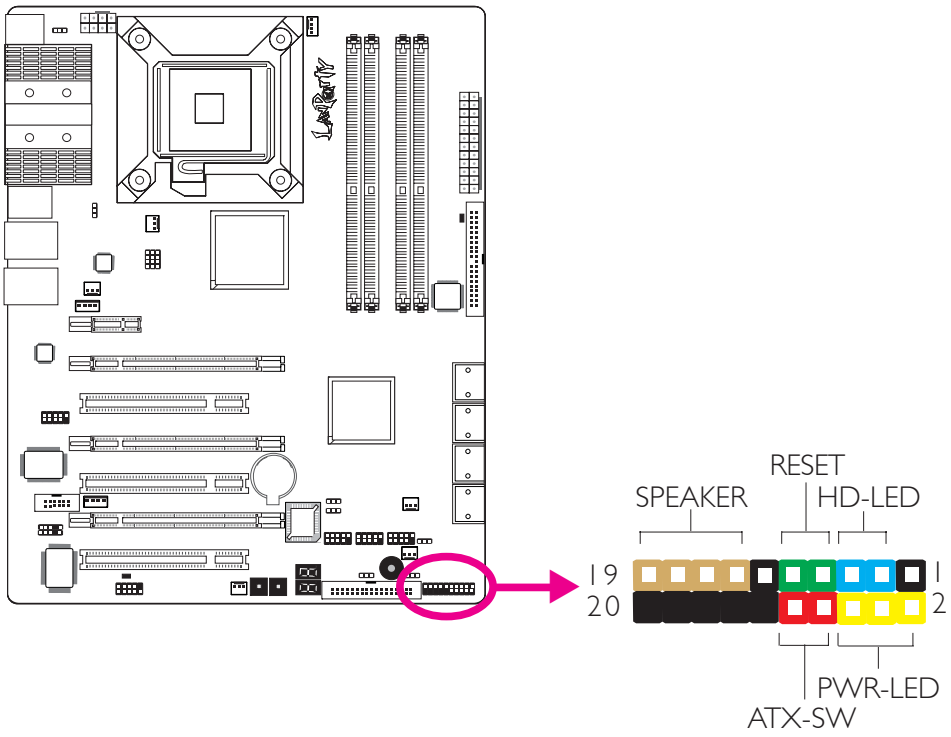
1. The time where power is totally discharged varies among power supplies. It's discharge time is highly dependent on the system's configuration such as the wattage of the power supply, the sequence of the supplied power as well as the number of peripheral devices connected to the system. Due to this reason, we strongly recommend that you wait for the Standby Power LED (refer to the "LEDs" section in this chapter for the location of the Standby Power LED) to lit off.

2. After the Standby Power LED has lit off, wait for 6 seconds before powering on the PC.

   If the system board is already enclosed in a chassis which apparently will not make the Standby Power LED visible, wait for 15 seconds before you restore power connections. 15 seconds is approximately the time that will take the LED to lit off and the time needed before restoring power.

The above will ensure protection and prevent damage to the motherboard and components.

Front Panel Connectors



HD-LED: Primary/Secondary IDE LED

This LED will light when the hard drive is being accessed.

RESET: Reset Switch

This switch allows you to reboot without having to power off the system thus prolonging the life of the power supply or system.

SPEAKER: Speaker Connector

This connects to the speaker installed in the system chassis.

ATX-SW: ATX Power Switch

Depending on the setting in the BIOS setup, this switch is a "dual function power button" that will allow your system to enter the Soft-Off or Suspend mode.

PWR-LED: Power/Standby LED

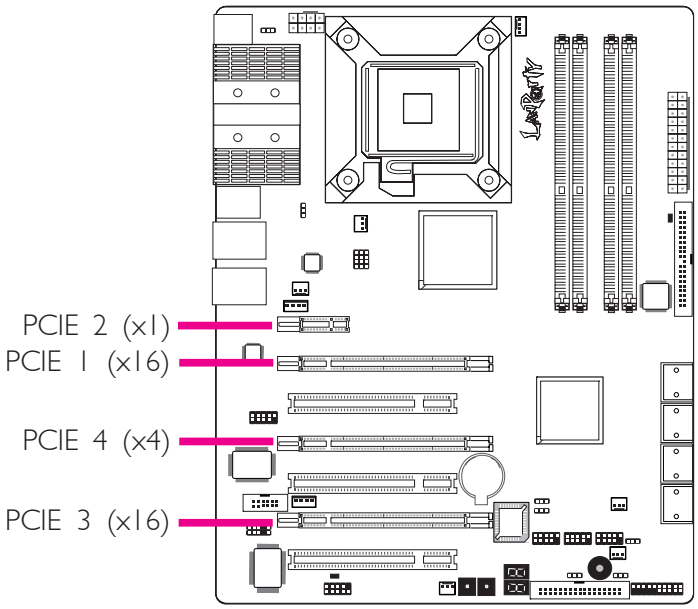
When the system's power is on, this LED will light. When the system is in the S1 (POS - Power On Suspend) or S3 (STR - Suspend To RAM) state, it will blink every second.

Note:

If a system did not boot-up and the Power/Standby LED did not light after it was powered-on, it may indicate that the CPU or memory module was not installed properly. Please make sure they are properly inserted into their corresponding socket.

	Pin	Pin Assignment
HD-LED (Primary/Secondary IDE LED)	3 5	HDD LED Power HDD
Reserved	14 16	N. C. N. C.
ATX-SW (ATX power switch)	8 10	PWRBT+ PWRBT-
Reserved	18 20	N. C. N. C.
RESET (Reset switch)	7 9	Ground H/W Reset
SPEAKER (Speaker connector)	13 15 17 19	Speaker Data N. C. Ground Speaker Power
PWR-LED (Power/Standby LED)	2 4 6	LED Power (+) LED Power (+) LED Power (-) or Standby Signal

PCI Express Slots



PCI Express x16

Install PCI Express x16 graphics card, that comply to the PCI Express specifications, into the PCI Express x16 slot. To install a graphics card into the x16 slot, align the graphics card above the slot then press it down firmly until it is completely seated in the slot. The retaining clip of the slot will automatically hold the graphics card in place.

PCI Express x1

Install PCI Express cards such as network cards or other cards that comply to the PCI Express specifications into the PCI Express x1 slot (PCIE 2).

Chapter 3 - BIOS Setup

Award BIOS Setup Utility

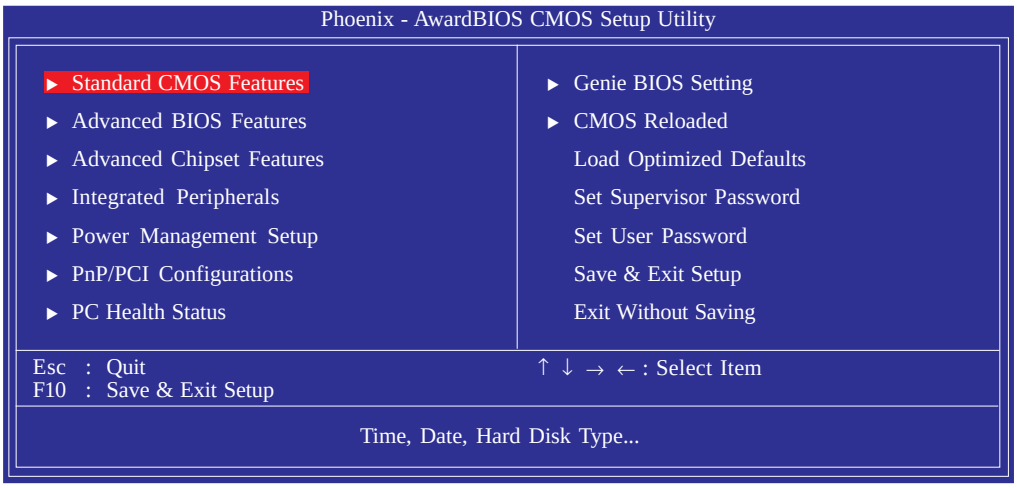
The Basic Input/Output System (BIOS) is a program that takes care of the basic level of communication between the processor and peripherals. In addition, the BIOS also contains codes for various advanced features found in this system board. This chapter explains the Setup Utility for the Award BIOS.

After you power up the system, the BIOS message appears on the screen and the memory count begins. After the memory test, the following message will appear on the screen:

Press DEL to enter setup

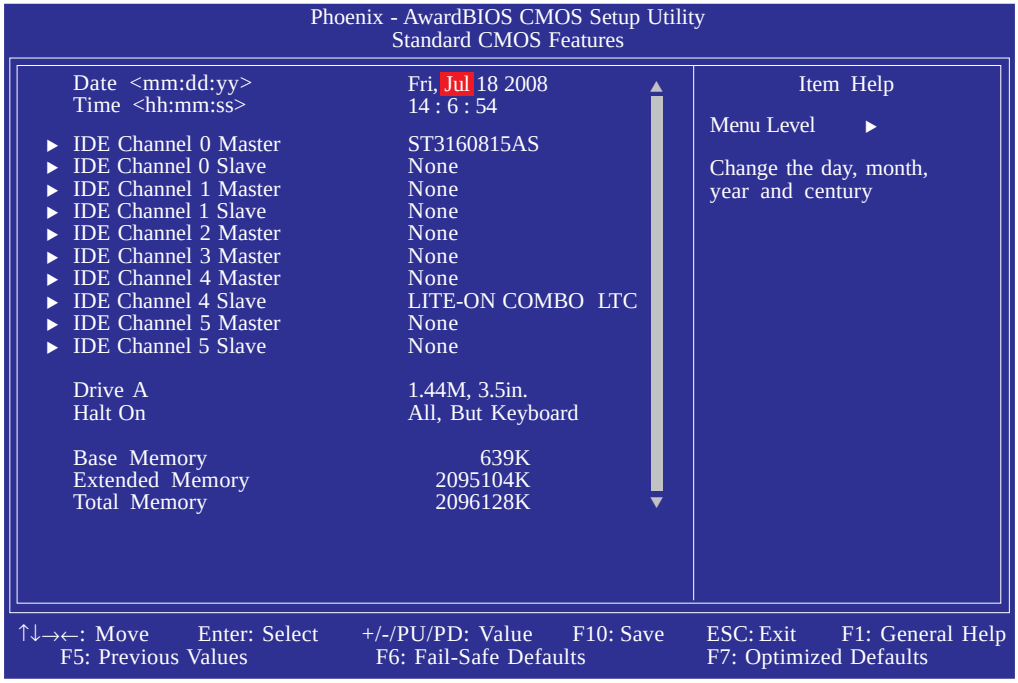
If the message disappears before you respond, restart the system or press the "Reset" button. You may also restart the system by pressing the <Ctrl> <Alt> and <Del> keys simultaneously.

When you press <Del>, the main menu screen will appear.


Phoenix - AwardBIOS CMOS Setup Utility
▶ Standard CMOS Features
▶ Advanced BIOS Features
▶ Advanced Chipset Features
▶ Integrated Peripherals
▶ Power Management Setup
▶ PnP/PCI Configurations
▶ PC Health Status
▶ Genie BIOS Setting
▶ CMOS Reloaded
Load Optimized Defaults
Set Supervisor Password
Set User Password
Save & Exit Setup
Exit Without Saving
Esc : Quit
F10 : Save & Exit Setup
↑ ↓ → ← : Select Item
Time, Date, Hard Disk Type...

Standard CMOS Features

Use the arrow keys to highlight "Standard CMOS Features" then press <Enter>. A screen similar to the one below will appear.


Phoenix - AwardBIOS CMOS Setup Utility
Standard CMOS Features
Date <mm:dd:yy> Fri, Jul 18 2008
Time <hh:mm:ss> 14 : 6 : 54
IDE Channel 0 Master ST3160815AS
IDE Channel 0 Slave None
IDE Channel 1 Master None
IDE Channel 1 Slave None
IDE Channel 2 Master None
IDE Channel 3 Master None
IDE Channel 4 Master None
IDE Channel 4 Slave LITE-ON COMBO LTC
IDE Channel 5 Master None
IDE Channel 5 Slave None
Drive A 1.44M, 3.5in.
Halt On All, But Keyboard
Base Memory 639K
Extended Memory 2095104K
Total Memory 2096128K
Item Help
Menu Level ▶
Change the day, month, year and century
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

The screen above list all the fields available in the Standard CMOS Features submenu, for ease of reference in this manual. In the actual CMOS setup, you have to use the scroll bar to view the fields. The settings on the screen are for reference only. Your version may not be identical to this one.

Date

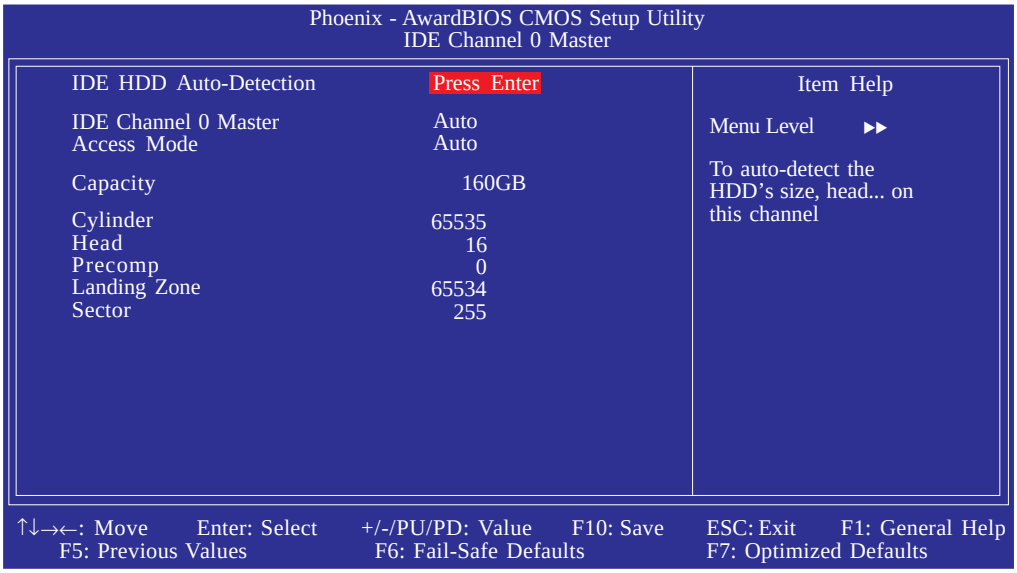
The date format is <day>, <month>, <date>, <year>. Day displays a day, from Sunday to Saturday. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year, from 1994 to 2079.

Time

The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.

IDE Channel 0 Master to IDE Channel 5 Slave

To configure the IDE drives, move the cursor to a field then press <Enter>. The following screen will appear.



The settings on the screen are for reference only. Your version may not be identical to this one.

IDE HDD Auto-Detection

Detects the parameters of the drive. The parameters will automatically be shown on the screen.

IDE Channel 0 Master to IDE Channel 5 Slave

The drive type information should be included in the documentation from your hard disk vendor. If you select "Auto", the BIOS will auto-detect the HDD & CD-ROM drive at the POST stage and show the IDE for the HDD & CD-ROM drive. If a hard disk has not been installed, select "None".

Access Mode

For hard drives larger than 528MB, you would typically select the LBA type. Certain operating systems require that you select CHS or Large. Please check your operating system's manual or Help desk on which one to select.

Capacity

Displays the approximate capacity of the disk drive. Usually the size is slightly greater than the size of a formatted disk given by a disk checking program.

Cylinder

This field displays the number of cylinders.

Head

This field displays the number of read/write heads.

Precomp

This field displays the number of cylinders at which to change the write timing.

Landing Zone

This field displays the number of cylinders specified as the landing zone for the read/write heads.

Sector

This field displays the number sectors per track.

Drive A

This field identifies the type of floppy disk drive installed.

None	No floppy drive is installed
360K, 5.25 in.	5-1/4 in. standard drive; 360KB capacity
1.2M, 5.25 in.	5-1/4 in. AT-type high-density drive; 1.2MB capacity
720K, 3.5 in.	3-1/2 in. double-sided drive; 720KB capacity
1.44M, 3.5 in.	3-1/2 in. double-sided drive; 1.44MB capacity
2.88M, 3.5 in.	3-1/2 in. double-sided drive; 2.88MB capacity

Halt On

This field determines whether the system will stop if an error is detected during power up. The default setting is All Errors.

No Errors The system boot will not stop for any errors detected.
All Errors The system boot will stop whenever the BIOS detects a non-fatal error.
All, But Keyboard The system boot will not stop for a keyboard error; it will stop for all other errors.
All, But Diskette The system boot will not stop for a disk error; it will stop for all other errors.
All, But Disk/Key The system boot will not stop for a disk or keyboard error; it will stop for all other errors.

Base Memory

Displays the amount of base (or conventional) memory installed in the system. The value of the base memory is typically 512K for systems with 512K memory installed on the motherboard or 640K for systems with 640K or more memory installed on the motherboard.

Extended Memory

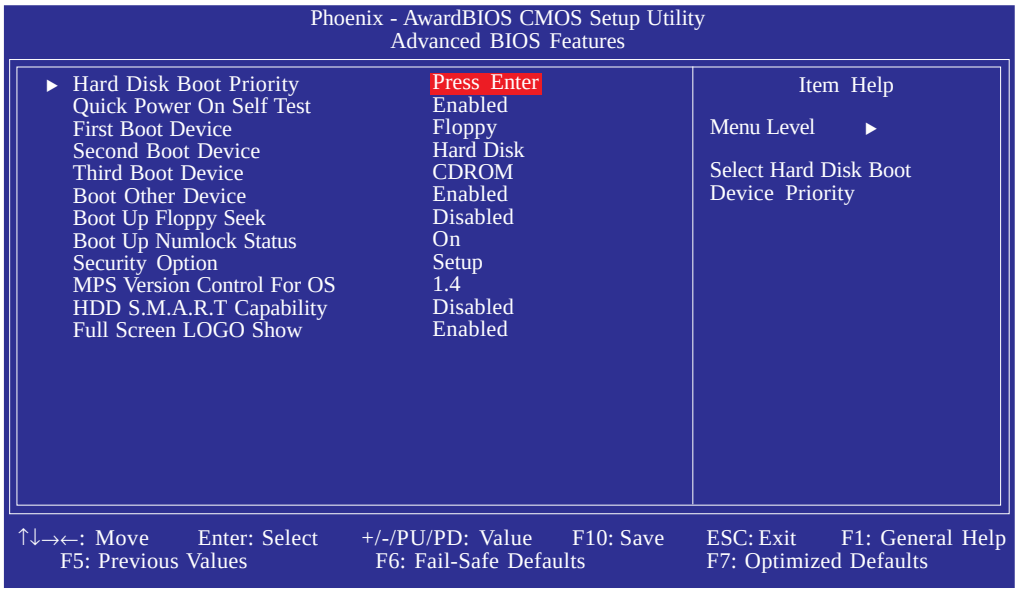
Displays the amount of extended memory detected during boot-up.

Total Memory

Displays the total memory available in the system.

Advanced BIOS Features

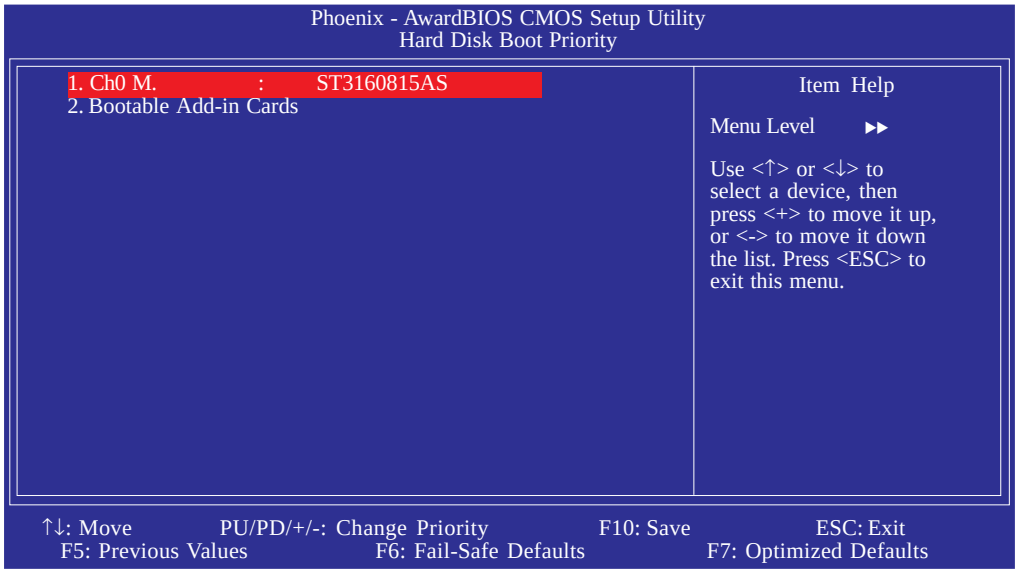
The Advanced BIOS Features allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference.



The settings on the screen are for reference only. Your version may not be identical to this one.

Hard Disk Boot Priority

This field is used to select the boot sequence of the hard drives. Move the cursor to this field then press <Enter>. Use the Up or Down arrow keys to select a device then press <+> to move it up or <-> to move it down the list.


Phoenix - AwardBIOS CMOS Setup Utility
Hard Disk Boot Priority
1. Ch0 M. : ST3160815AS
2. Bootable Add-in Cards
Item Help
Menu Level ▸▸
Use <↑> or <↓> to select a device, then press <+> to move it up, or <-> to move it down the list. Press <ESC> to exit this menu.
↑↓: Move
PU/PD/+/-: Change Priority
F10: Save
ESC: Exit
F5: Previous Values
F6: Fail-Safe Defaults
F7: Optimized Defaults

The settings on the screen are for reference only. Your version may not be identical to this one.

Quick Power On Self Test

This field speeds up Power On Self Test (POST) whenever the system is powered on. The BIOS will shorten or skip some check items during POST. To attain the shortest POST time, select "Fast".

First Boot Device, Second Boot Device, Third Boot Device and Boot Other Device

Select the drive to boot first, second and third in the "First Boot Device" "Second Boot Device" and "Third Boot Device" fields respectively. The BIOS will boot the operating system according to the sequence of the drive selected. Set "Boot Other Device" to Enabled if you wish to boot from another device.

Boot Up Floppy Seek

When enabled, the BIOS will check whether the floppy disk drive installed is 40 or 80 tracks. Note that the BIOS cannot distinguish between 720K, 1.2M, 1.44M and 2.88M drive types as they are all 80 tracks. When disabled, the BIOS will not search for the type of floppy disk drive by track number. Note that there will not be any warning message if the drive installed is 360KB.

Boot Up NumLock Status

This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on wherein the function of the numeric keypad is the number keys. When set to Off, the function of the numeric keypad is the arrow keys.

Security Option

This field determines when the system will prompt for the password-everytime the system boots or only when you enter the BIOS setup. Set the password in the Set Supervisor/User Password submenu.

System The system will not boot and access to Setup will be denied unless the correct password is entered at the prompt.

Setup The system will boot, but access to Setup will be denied unless the correct password is entered at the prompt.

MPS Version Control for OS

This field is used to select the MPS version that the system board is using.

HDD S.M.A.R.T. Capability

The system board supports SMART (Self-Monitoring, Analysis and Reporting Technology) hard drives. SMART is a reliability prediction technology for ATA/IDE and SCSI drives. The drive will provide sufficient notice to the system or user to backup data prior to the drive's failure. The default is Disabled. If you are using hard drives that support S.M.A.R.T., set this field to Enabled. SMART is supported in ATA/33 or later hard drives.

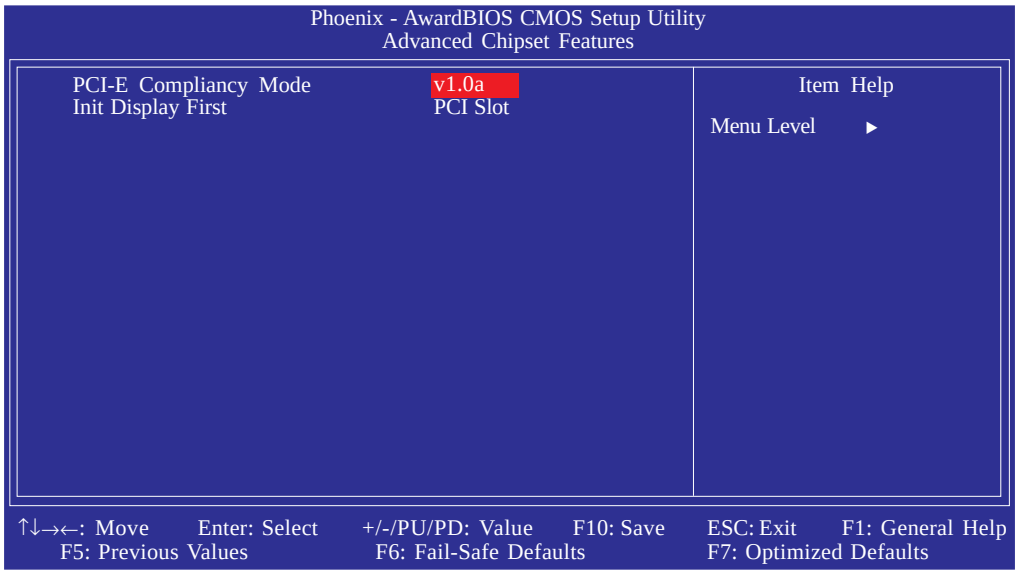
Full Screen Logo Show

This field is applicable only if you want a particular logo to appear during system boot-up.

Enabled The logo will appear in full screen during system boot-up.

Disabled The logo will not appear during system boot-up.

Advanced Chipset Features



The settings on the screen are for reference only. Your version may not be identical to this one.

This section gives you functions to configure the system based on the specific features of the chipset. The chipset manages bus speeds and access to system memory resources. **These items should not be altered unless necessary.** The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered some incompatibility or that data was being lost while using your system.

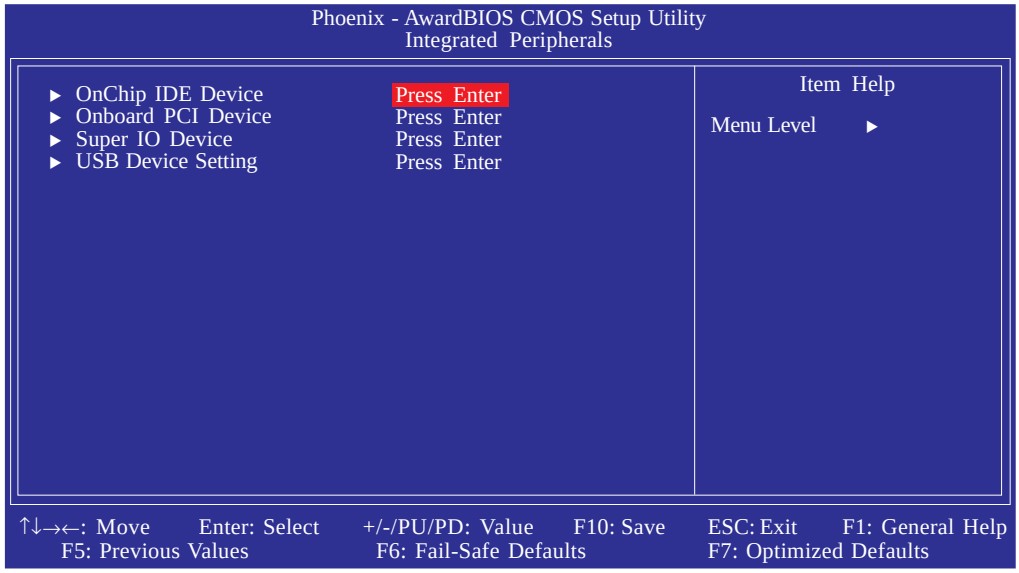
PCI-E Compliancy Mode

This field is used to select the mode for the PCI Express add-in card.

Init Display First

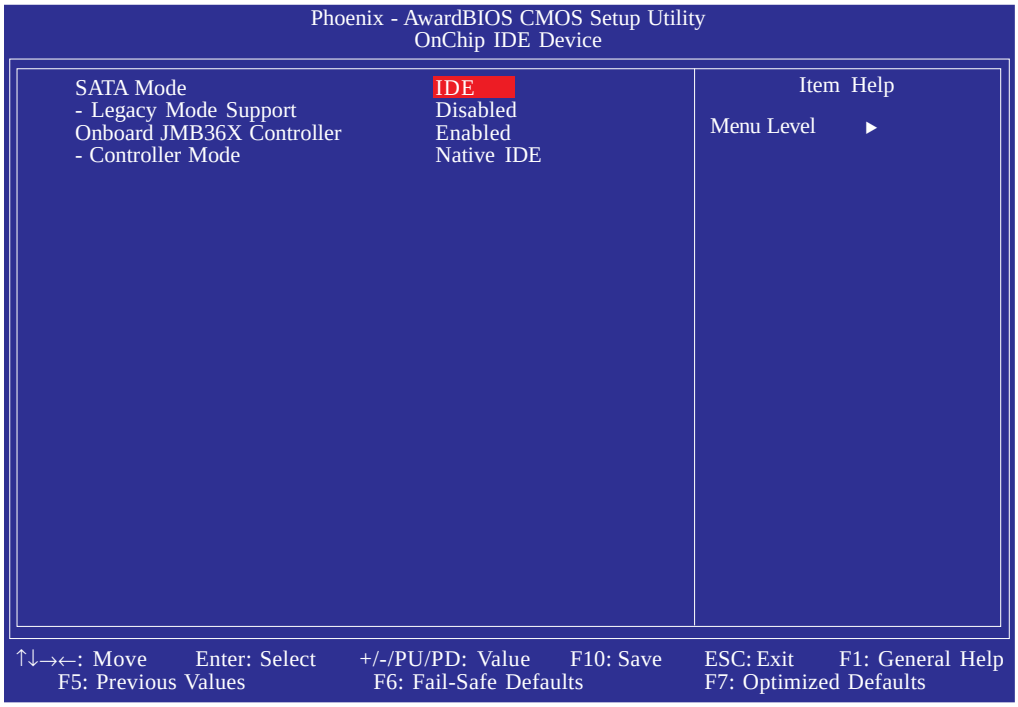
PCI Express Slot	When the system boots, it will first initialize the PCI Express Master graphics card.
PCI Slot	When the system boots, it will first initialize PCI.

Integrated Peripherals



The settings on the screen are for reference only. Your version may not be identical to this one.

OnChip IDE Device



The settings on the screen are for reference only. Your version may not be identical to this one.

SATA Mode

This field is used to configure the SATA devices supported by the Intel ICH9R.

IDE This option configures the Serial ATA drives as Parallel ATA storage devices.
RAID This option allows you to create RAID or Intel Matrix Storage configuration on Serial ATA devices.
AHCI This option allows the Serial ATA devices to use AHCI (Advanced Host Controller Interface).

Legacy Mode Support

The options are Enabled and Disabled.

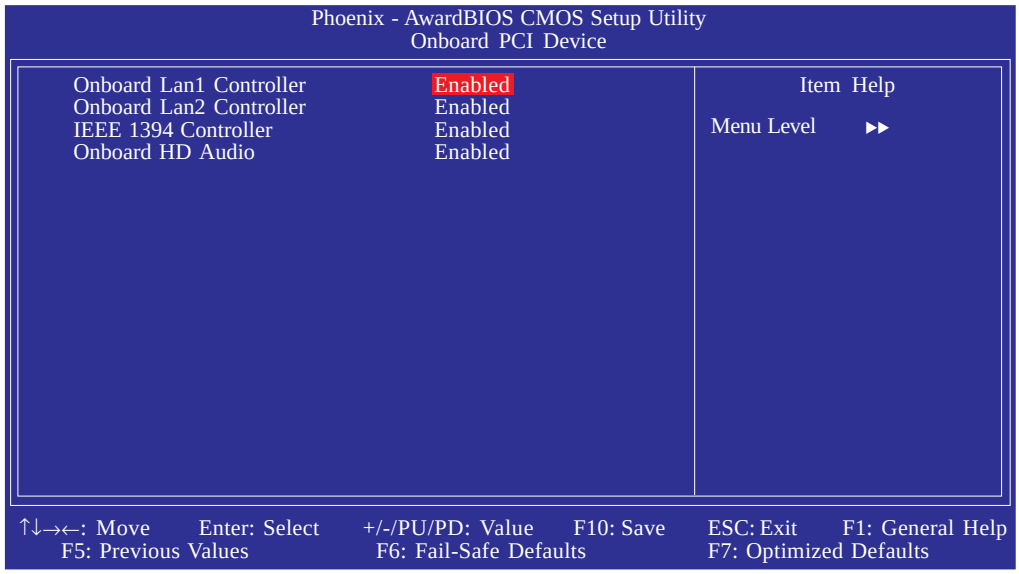
Onboard JMB36X Controller

This field is used to enable or disable the onboard JMicron JMB363 controller.

Controller Mode

This field is used to configure the SATA devices supported by the JMicron JMB363. The options are AHCI+IDE, RAID+IDE and Native IDE.

Onboard PCI Device



The settings on the screen are for reference only. Your version may not be identical to this one.

Onboard Lan1 Controller

This field is used to enable or disable the onboard LAN 1 controller.

Onboard Lan2 Controller

This field is used to enable or disable the onboard LAN 2 controller.

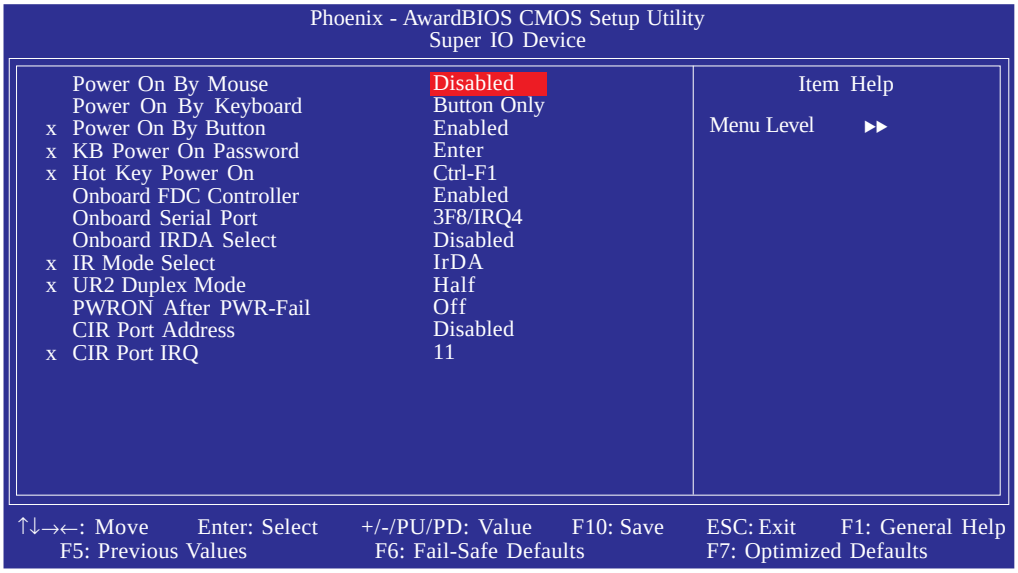
IEEE 1394 Controller

This field is used to enable or disable the onboard IEEE 1394.

Onboard HD Audio

This field is used to enable or disable the onboard HD audio.

Super IO Device


Phoenix - AwardBIOS CMOS Setup Utility
Super IO Device
Power On By Mouse Disabled
Power On By Keyboard Button Only
x Power On By Button Enabled
x KB Power On Password Enter
x Hot Key Power On Ctrl-F1
Onboard FDC Controller Enabled
Onboard Serial Port 3F8/IRQ4
Onboard IRDA Select Disabled
x IR Mode Select IrDA
x UR2 Duplex Mode Half
PWRON After PWR-Fail Off
CIR Port Address Disabled
x CIR Port IRQ 11
Item Help
Menu Level ▸▸
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

The settings on the screen are for reference only. Your version may not be identical to this one.

Power On By Mouse

Disabled	Disables the mouse power-on function.
Mouse Move/Click	Move or click the mouse to power on the system.
Mouse Click	Click the mouse to power on the system.

Power On By Keyboard

This field allows you to use the keyboard to power-on the system.

Button only	Default setting. Uses the power button to power on the system.
Password	When this option is selected, set the password you would like to use to power-on the system in the "KB Power On Password" field.
Hot Key	When this option is selected, select the function key you would like to use to power-on the system in the "Hot Key Power On" field.
Any Key	Press any key to power-on the system.
Keyboard 98	When this option is selected, press the "wake up" key of the Windowsâ 98 compatible keyboard to power-on the system.

Power On By Button

To use the power button to power on the system, set this field to Enabled.

KB Power On Password

Move the cursor to this field and press <Enter>. Enter your password. You can enter up to 5 characters. Type in exactly the same password to confirm, then press <Enter>.

The power button will not function once a keyboard password has been set in this field. You must type the correct password to power-on the system. If you forgot the password, power-off the system and remove the battery. Wait for a few seconds and install it back before powering-on the system.

Hot Key Power On

This field is used to select a function key that you would like to use to power-on the system.

Onboard FDC Controller

Enabled	Enables the onboard floppy disk controller.
Disabled	Disables the onboard floppy disk controller.

Onboard Serial Port

Auto	The system will automatically select an I/O address for the onboard serial port.
3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3	Allows you to manually select an I/O address for the onboard serial port.
Disabled	Disables the onboard serial port.

Onboard IRDA Select

3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3	Allows you to manually select an I/O address for the onboard IrDA.
Disabled	Disables the onboard IrDA.

IR Mode Select

This field is used to select the type of IrDA standard supported by your IrDA device. For better transmission of data, your IrDA peripheral device must be within a 30° angle and within a distance of 1 meter.

UR2 Duplex Mode

Half	Data is completely transmitted before receiving data.
Full	Transmits and receives data simultaneously.

PWRON After PWR-Fail

Off	When power returns after an AC power failure, the system's power is off. You must press the Power button to power-on the system.
On	When power returns after an AC power failure, the system will automatically power-on.
Former-Sts	When power returns after an AC power failure, the system will return to the state where you left off before power failure occurs. If the system's power is off when AC power failure occurs, it will remain off when power returns. If the system's power is on when AC power failure occurs, the system will power-on when power returns.

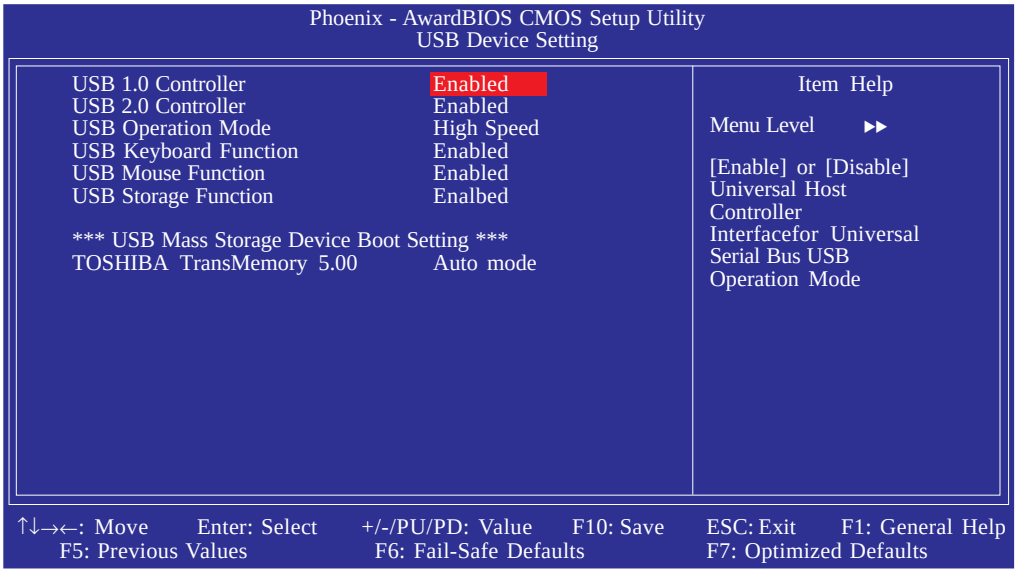
CIR Port Address

This field is used to select an I/O address for the CIR device.

CIR Port IRQ

This field is used to select an IRQ for the CIR device.

USB Device Setting


Phoenix - AwardBIOS CMOS Setup Utility
USB Device Setting
USB 1.0 Controller Enabled
USB 2.0 Controller Enabled
USB Operation Mode High Speed
USB Keyboard Function Enabled
USB Mouse Function Enabled
USB Storage Function Enalbed
*** USB Mass Storage Device Boot Setting ***
TOSHIBA TransMemory 5.00 Auto mode
Item Help
Menu Level ▸▸
[Enable] or [Disable] Universal Host Controller Interfacefor Universal Serial Bus USB Operation Mode
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

The settings on the screen are for reference only. Your version may not be identical to this one.

USB 1.0 Controller

This field is used to enable or disable the Universal Host Controller Interface (USB 1.0).

USB 2.0 Controller

This field is used to enable or disable the Enhanced Host Controller Interface (USB 2.0).

USB Operation Mode

This field is used to select the USB's operation mode.

High Speed	If the USB device is a high speed device, it will operate in high speed mode. If it is a full/low speed device, it will operate in full/low speed mode.
Full/Low Speed	Regardless of the speed of the USB device, it will always operate in full/low speed mode.

USB Keyboard Function

Due to the limited space of the BIOS ROM, the support for legacy USB keyboard (in DOS mode) is by default set to Disabled. With more BIOS ROM space available, it will be able to support more advanced features as well as provide compatibility to a wide variety of peripheral devices.

If a PS/2 keyboard is not available and you need to use a USB keyboard to install Windows (installation is performed in DOS mode) or run any program under DOS, set this field to Enabled.

USB Mouse Function

Due to the limited space of the BIOS ROM, the support for legacy USB mouse (in DOS mode) is by default set to Disabled. With more BIOS ROM space available, it will be able to support more advanced features as well as provide compatibility to a wide variety of peripheral devices.

If a PS/2 mouse is not available and you need to use a USB mouse to install Windows (installation is performed in DOS mode) or run any program under DOS, set this field to Enabled.

USB Storage Function

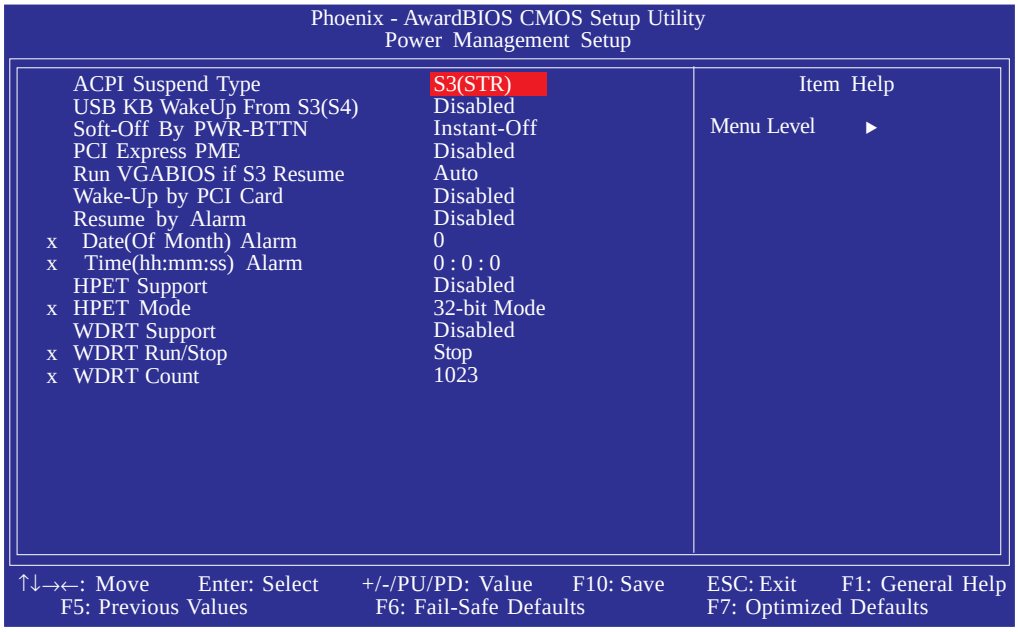
This field is used to enable or disable the support for legacy USB mass storage.

TOSHIBA TransMemory 5.00

Auto	The USB device will boot according to the device type.
FDD Mode	The USB device will always boot as a floppy drive.
HDD Mode	The USB device will always boot as a hard drive.

Power Management Setup

The Power Management Setup allows you to configure your system to most effectively save energy.


Phoenix - AwardBIOS CMOS Setup Utility
Power Management Setup
ACPI Suspend Type S3(STR)
USB KB WakeUp From S3(S4) Disabled
Soft-Off By PWR-BTTN Instant-Off
PCI Express PME Disabled
Run VGABIOS if S3 Resume Auto
Wake-Up by PCI Card Disabled
Resume by Alarm Disabled
x Date(Of Month) Alarm 0
x Time(hh:mm:ss) Alarm 0 : 0 : 0
HPET Support Disabled
x HPET Mode 32-bit Mode
WDRT Support Disabled
x WDRT Run/Stop Stop
x WDRT Count 1023
Item Help
Menu Level ▶
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

The settings on the screen are for reference only. Your version may not be identical to this one.

ACPI Suspend Type

This field is used to select the type of Suspend mode.

S1(POS) Enables the Power On Suspend function.
S3(STR) Enables the Suspend to RAM function.

USB KB Wakeup From S3(S4)

This field, when enabled, allows you to use a USB keyboard to wake up a system that is in the S3 (STR - Suspend To RAM) state. This can be configured only if the "ACPI Suspend Type" field is set to "S3(STR)".

Soft-Off by PWR-BTTN

This field allows you to select the method of powering off your system.

Delay 4 Sec. Regardless of whether the Power Management function is enabled or disabled, if the power button is pushed and released in less than 4 sec, the system enters the Suspend mode. The purpose of this function is to prevent the system from powering off in case you accidentally "hit" or pushed the power button. Push and release again in less than 4 sec to restore. Pushing the power button for more than 4 seconds will power off the system.

Instant-Off Pressing and then releasing the power button at once will immediately power off your system.

PCI Express PME

This field is used to enable or disable the PCI Express PME.

Run VGABIOS if S3 Resume

When this field is set to Auto, the system will initialize the VGA BIOS when it wakes up from the S3 state. This can be configured only if the "ACPI Suspend Type" field is set to "S3(STR)". When this feature is disabled, the system resume time is shortened but system will need an AGP driver to initialize the VGA card. Therefore, if the AGP driver of the card does not support the initialization feature, the display may work abnormally or not function after resuming from S3.

Wake-Up by PCI Card

Enabled This field should be set to Enabled only if your PCI card such as LAN card or modem card uses the PCI PME (Power Management Event) signal to remotely wake up the system. Access to the LAN card or PCI card will cause the system to wake up. Refer to the card's documentation for more information.

Disabled The system will not wake up despite access to the PCI card.

Resume By Alarm

Enabled	When Enabled, you can set the time you would like the Soft Power Down (Soft-Off) PC to power-on in the "Time (dd:hh:mm) of Alarm" field. However, if the system is being accessed by incoming calls or the network prior to the time set in the field, the system will give priority to the incoming calls or network.
Disabled	Disables the automatic power-on function. (default).

Day (of Month) Alarm

0	The system will power-on everyday according to the time set in the "Time (hh:mm:ss) Alarm" field.
1-31	Select a date you would like the system to power-on. The system will power-on on the set date, and time set in the "Time (hh:mm:ss) Alarm" field.

Time (hh:mm:ss) of Alarm

This is used to set the time you would like the system to power-on.

HPET Support

This field is used to enable or disable HPET.

HPET Mode

This field is used to select the HPET mode.

WDRT Support

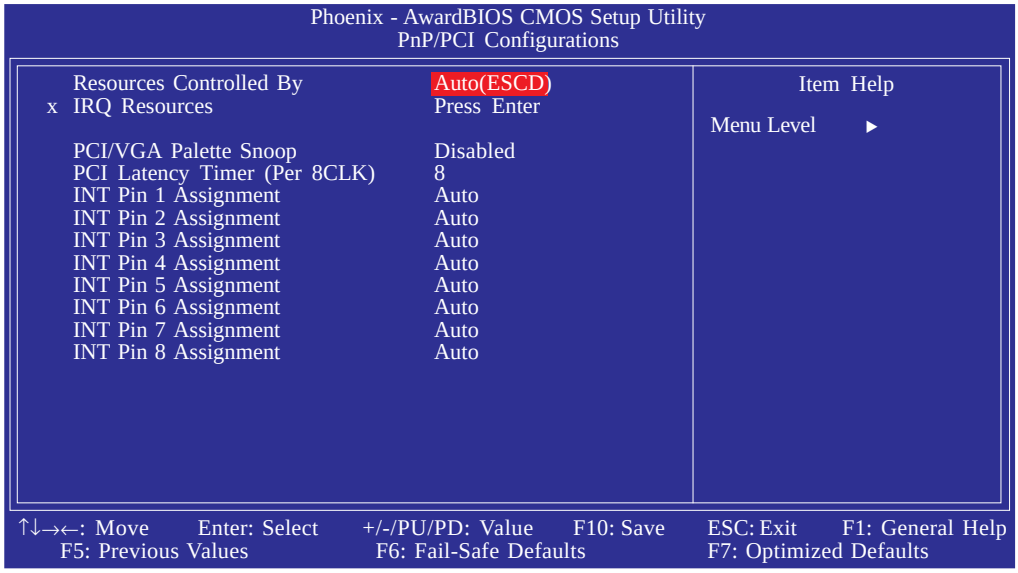
This field is used to enable or disable WDRT.

WDRT Run/Stop and WDRT Count

These fields are used to configure WDRT.

PnP/PCI Configurations

This section describes configuring the PCI bus system. It covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.



The settings on the screen are for reference only. Your version may not be identical to this one.

Resources Controlled By

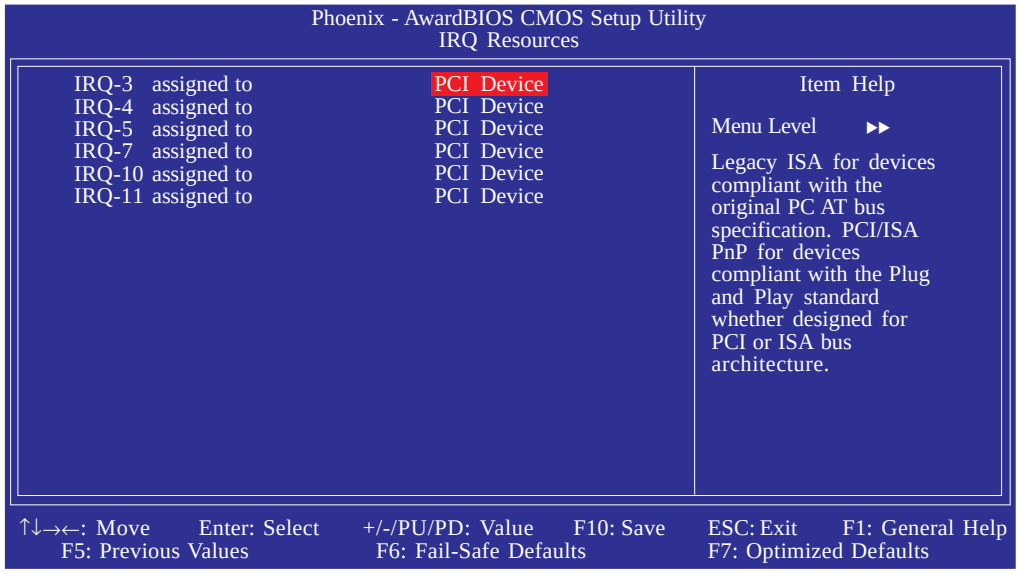
The Award Plug and Play BIOS has the capability to automatically configure all of the boot and Plug and Play compatible devices.

Auto(ESCD) The system will automatically detect the settings for you.

Manual Choose the specific IRQ in the "IRQ Resources" field.

IRQ Resources

Move the cursor to this field and press <Enter>. This field is used to set each system interrupt to either Reserved or PCI Device.



The settings on the screen are for reference only. Your version may not be identical to this one.

PCI/VGA Palette Snoop

This field determines whether the MPEG ISA/VESA VGA cards can work with PCI/VGA or not.

Enabled MPEG ISA/VESA VGA cards work with PCI/VGA.
Disabled MPEG ISA/VESA VGA cards does not work with PCI/VGA.

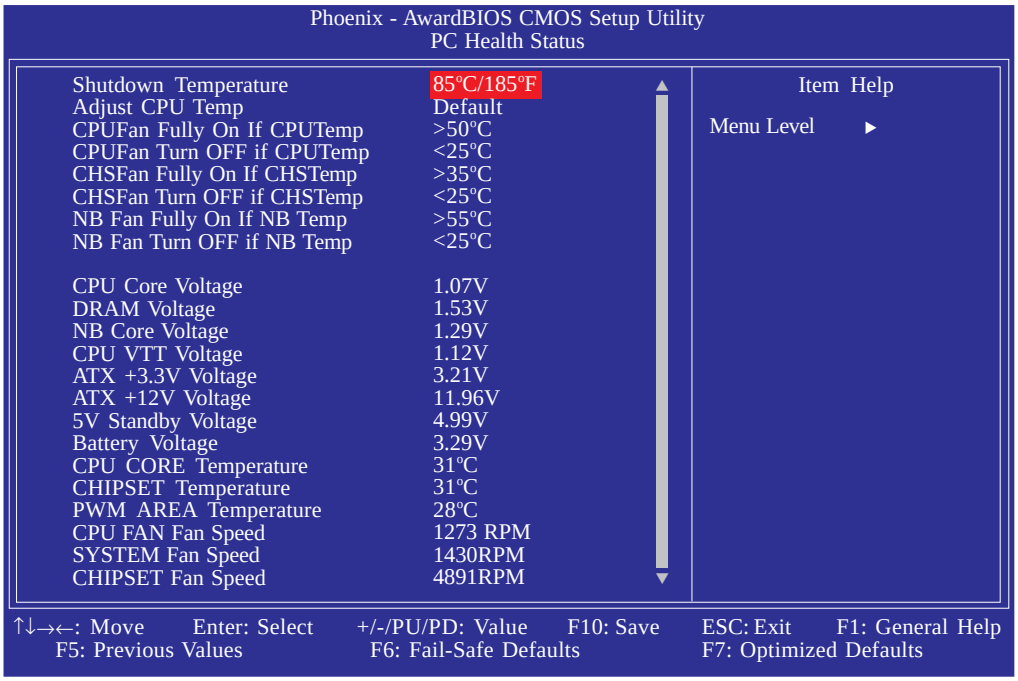
PCI Latency Timer (Per 8CLK)

This feature is used to select the length of time each PCI device will control the bus before another takes over. The larger the value, the longer the PCI device can retain control of the bus. Since each access to the bus comes with an initial delay before any transaction can be made, low values for the PCI Latency Timer will reduce the effectiveness of the PCI bandwidth while higher values will improve it.

INT Pin 1 Assignment to INT Pin 8 Assignment

By default, a device is automatically assigned to each INT. You can also manually assign an INT for each device.

PC Health Status


Phoenix - AwardBIOS CMOS Setup Utility
PC Health Status
Shutdown Temperature 85°C/185°F
Adjust CPU Temp Default
CPUFan Fully On If CPUTemp >50°C
CPUFan Turn OFF if CPUTemp <25°C
CHSFan Fully On If CHSTemp >35°C
CHSFan Turn OFF if CHSTemp <25°C
NB Fan Fully On If NB Temp >55°C
NB Fan Turn OFF if NB Temp <25°C
CPU Core Voltage 1.07V
DRAM Voltage 1.53V
NB Core Voltage 1.29V
CPU VTT Voltage 1.12V
ATX +3.3V Voltage 3.21V
ATX +12V Voltage 11.96V
5V Standby Voltage 4.99V
Battery Voltage 3.29V
CPU CORE Temperature 31°C
CHIPSET Temperature 31°C
PWM AREA Temperature 28°C
CPU FAN Fan Speed 1273 RPM
SYSTEM Fan Speed 1430RPM
CHIPSET Fan Speed 4891RPM
Item Help
Menu Level ▶
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

The screen above list all the fields available in the PC Health Status submenu, for ease of reference in this manual. In the actual CMOS setup, you have to use the scroll bar to view the fields. The settings on the screen are for reference only. Your version may not be identical to this one.

Shutdown Temperature

You can prevent the system from overheating by selecting a temperature at which the system will shutdown. If the system detected that its temperature exceeded the one set in this field, it will automatically shutdown.

Adjust CPU Temp

This field is used to select the CPU's temperature and allows you to adjust in small increment.

CPUFan Fully On If CPUTemp

This field is used to select the CPU's temperature at which the CPU fan will rotate at full speed.

CPUFan Turn Off If CPUTemp

This field is used to select the CPU's temperature at which the CPU fan will rotate at a start speed which is the slowest speed.

Note:

1. If the CPU temperature runs between the highest (set in the "CPUFan Fully On If CPUTemp" field) and lowest (set in the "CPUFan Turn Off If CPUTemp" field) temperature, the system will automatically adjust the CPU fan's speed according to the temperature.

2. If you want to reduce the CPU fan's noise or prevent CPU overheat, select a lower temperature in the "CPUFan Fully On If CPUTemp" field to allow the CPU fan to rotate full speed at the selected lower temperature.

CHSFan Fully On If CHSTemp

This field is used to select the system's temperature at which the chassis fan will rotate at full speed.

CHSFan Turn Off If CHSTemp

This field is used to select the system's temperature at which the chassis fan will rotate at a start speed which is the slowest speed.

Note:

If the system's temperature runs between the highest (set in the "CHSFan Fully On If CHSTemp" field) and lowest (set in the "CHSFan Turn Off If CHSTemp" field) temperature, the system will automatically adjust the chassis fan's speed according to the temperature.

NB Fan Fully On If NB Temp

This field is used to select the Northbridge chip's temperature at which the chip's fan will rotate at full speed.

NB Fan Turn Off If NB Temp

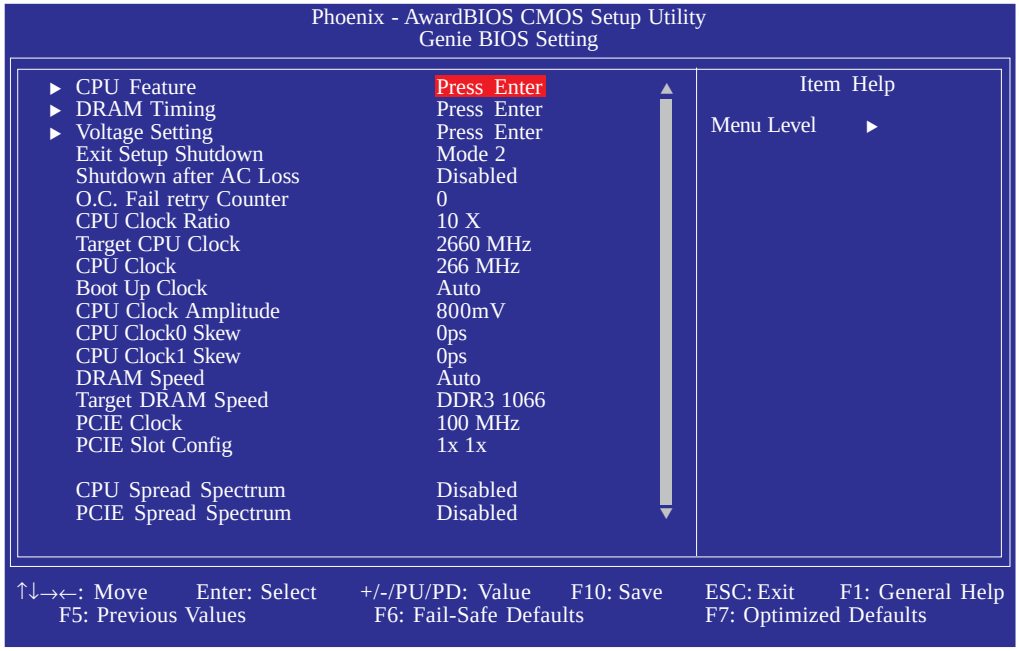
This field is used to select the Northbridge chip's temperature at which the chip's fan will rotate at a start speed which is the slowest speed.

Note:
If the Northbridge chip's temperature runs between the highest (set in the "NB Fan Fully On If NB Temp" field) and lowest (set in the "NB Fan Turn Off If NB Temp" field) temperature, the system will automatically adjust the fan speed of the Northbridge chip according to the temperature.

CPU Core Voltage to CHIPSET Fan Speed

These fields will show the output voltage, temperature and fan speed of the monitored devices or components.

Genie BIOS Setting


Phoenix - AwardBIOS CMOS Setup Utility
Genie BIOS Setting
CPU Feature Press Enter
DRAM Timing Press Enter
Voltage Setting Press Enter
Exit Setup Shutdown Mode 2
Shutdown after AC Loss Disabled
O.C. Fail retry Counter 0
CPU Clock Ratio 10 X
Target CPU Clock 2660 MHz
CPU Clock 266 MHz
Boot Up Clock Auto
CPU Clock Amplitude 800mV
CPU Clock0 Skew 0ps
CPU Clock1 Skew 0ps
DRAM Speed Auto
Target DRAM Speed DDR3 1066
PCIE Clock 100 MHz
PCIE Slot Config 1x 1x
CPU Spread Spectrum Disabled
PCIE Spread Spectrum Disabled
Item Help
Menu Level ▶
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

The screen above list all the fields available in the Genie BIOS Setting submenu, for ease of reference in this manual. In the actual CMOS setup, you have to use the scroll bar to view the fields. The settings on the screen are for reference only. Your version may not be identical to this one.

CPU Feature
DRAM Timing
Voltage Setting

Refer to the following pages for more information on these submenus.

Exit Setup Shutdown

The options are Mode 1 and Mode 2.

Shutdown After AC Loss

The options are Enabled and Disabled.

O.C. Fail Retry Counter

The options are 0, 1, 2 and 3.

CPU Clock Ratio

This field is used to select the CPU's frequency ratio.

Target CPU Clock

This field will show the targeted CPU clock.

CPU Clock

This field provides several options for selecting the external system bus clock of the processor. The available options allow you to adjust the processor's bus clock by 1MHz increment.

Important:
Selecting an external bus clock other than the default setting may result to the processor's or system's instability and are not guaranteed to provide better system performance.

Boot Up Clock

This field is used to select the boot up clock.

CPU Clock Amplitude

The options are 700mV, 800mV, 900mV and 1000mV.

CPU Clock0 Skew and CPU Clock1 Skew

Thse fields are used to select a skew control value of the CPU clock.

DRAM Speed

This field is used to select the clock speed of the DIMM.

Target DRAM Speed

This field will show the targeted DRAM speed.

PCIE Clock

This field is used to select the bus clock of the PCI Express.

PCIE Slot Config

This field is used to configure the PCI Express slots.

CPU Spread Spectrum

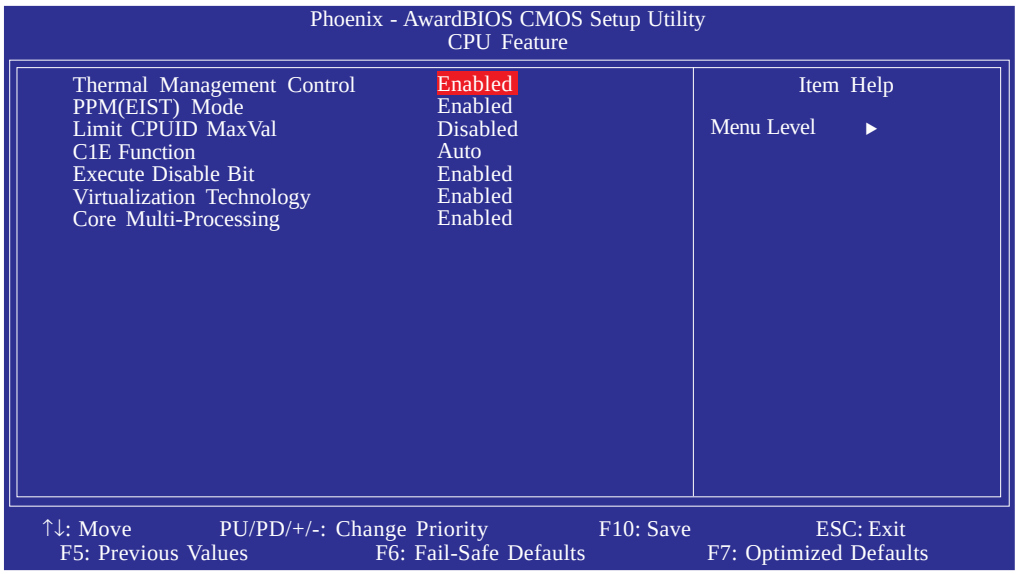
The field is used to configure the CPU spread spectrum.

PCIE Spread Spectrum

The field is used to configure the PCIE spread spectrum.

CPU Feature

Move the cursor to this field and press <Enter>, the following screen will appear:



The settings on the screen are for reference only. Your version may not be identical to this one.

Thermal Management Control

This field is used to enable or disable thermal management.

PPM (EIST) Mode

The options are Enabled and Disabled.

Limit CPUID MaxVal

The CPUID instruction of some newer CPUs will return a value greater than 3. Problems will occur only in certain operating systems. The default is Disabled because this problem does not exist in the Windows series operating systems. If you are using an operating system other than Windows, this problem may occur. To avoid tihs problem, enable this field to limit the return value to 3 or lesser than 3.

C1E Function

The options are Auto and Disabled.

Execute Disable Bit

When this field is set to Disabled, it will force the XD feature flag to always return to 0.

Virtualization Technology

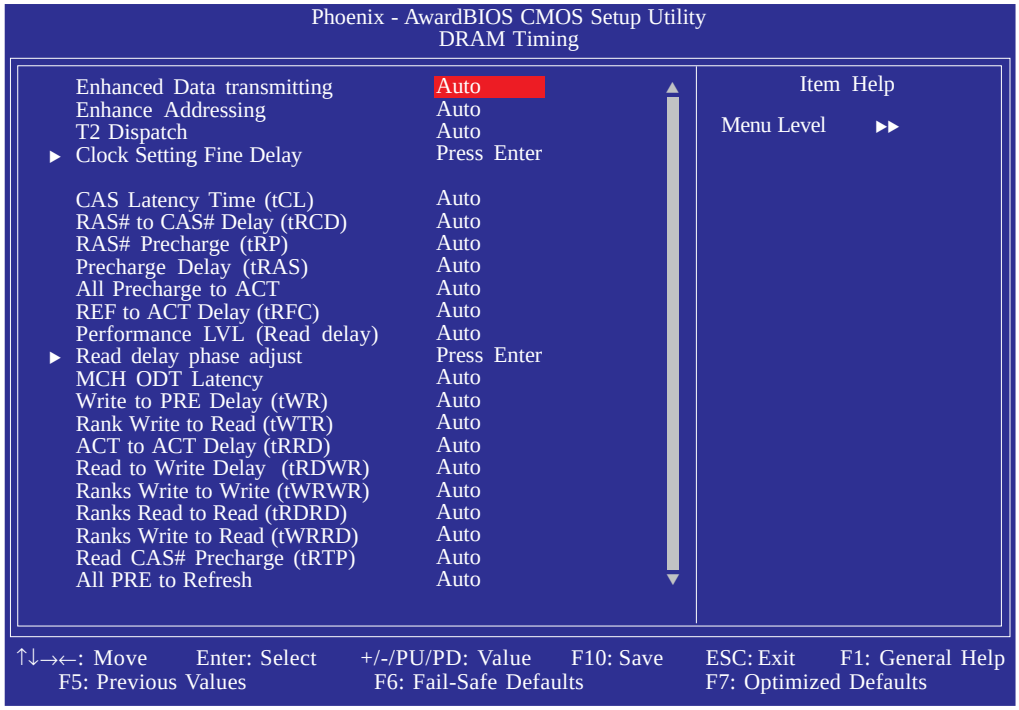
When this field is set to Enabled, the VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

Core Multi-Processing

The options are Enabled and Disabled.

DRAM Timing

Move the cursor to this field and press <Enter>. The following screen will appear.


Phoenix - AwardBIOS CMOS Setup Utility
DRAM Timing
Enhanced Data transmitting Auto
Enhance Addressing Auto
T2 Dispatch Auto
▶ Clock Setting Fine Delay Press Enter
CAS Latency Time (tCL) Auto
RAS# to CAS# Delay (tRCD) Auto
RAS# Precharge (tRP) Auto
Precharge Delay (tRAS) Auto
All Precharge to ACT Auto
REF to ACT Delay (tRFC) Auto
Performance LVL (Read delay) Auto
▶ Read delay phase adjust Press Enter
MCH ODT Latency Auto
Write to PRE Delay (tWR) Auto
Rank Write to Read (tWTR) Auto
ACT to ACT Delay (tRRD) Auto
Read to Write Delay (tRDWR) Auto
Ranks Write to Write (tWRWR) Auto
Ranks Read to Read (tRDRD) Auto
Ranks Write to Read (tWRRD) Auto
Read CAS# Precharge (tRTP) Auto
All PRE to Refresh Auto
Item Help
Menu Level ▶▶
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

The screen above list all the fields available in the DRAM Timing submenu, for ease of reference in this manual. In the actual CMOS setup, you have to use the scroll bar to view the fields. The settings on the screen are for reference only. Your version may not be identical to this one.

Enhance Data Transmitting

The options are Auto, Normal, Fast and Turbo.

Enhance Addressing

The options are Auto, Normal and Fast.

T2 Dispatch

The options are Auto, Enabled and Disabled.

Clock Setting Fine Delay

Refer to the following pages for more information on this submenu.

CAS Latency Time (tCL)

This field is used to select the clock cycle of the CAS latency time. The option selected specifies the timing delay before SDRAM starts a read command after receiving it.

RAS# to CAS# Delay (tRCD)

This field is used to select the RAS# to CAS# delay time when reading and writing to the same bank.

RAS# Precharge (tRP)

This field is used to select the idle clocks after issuing a precharge command to the DRAM.

Precharge Delay (tRAS)

The options are Auto, and 9 to15.

All Precharge to ACT

The options are Auto, and 2 to 9.

REF to ACT Delay (tRFC)

The options are Auto, and 16 to 33.

Performance LVL (Read delay)

The options are Auto, and 1 to 15.

Read Delay Phase Adjust

Refer to the following pages for more information on this submenu.

MCH ODT Latency

The options are Auto, and 1 to 15.

Write to PRE Delay (tWR)

The options are Auto, and 8 to 31.

Rank Write to Read (tWTR)

The options are Auto, and 8 to 39.

ACT to ACT Delay

The options are Auto, and 0 to 31.

Read to Write Delay (tRDWR)

This field is used to select the read to write delay time. Although this is not a DRAM specified timing parameter, it is related to the routing latencies on the clock forwarded bus. This is measured from the first address bus slot which is not associated with part of the read burst.

Ranks Write to Write (tWRWR)

The options are Auto, and 1 to 15.

Ranks Read to Read (tRDRD)

The options are Auto, and 1 to 15.

Ranks Write to Read (tWRRD)

The options are Auto, and 1 to 15.

Read CAS# Precharge (tRTP)

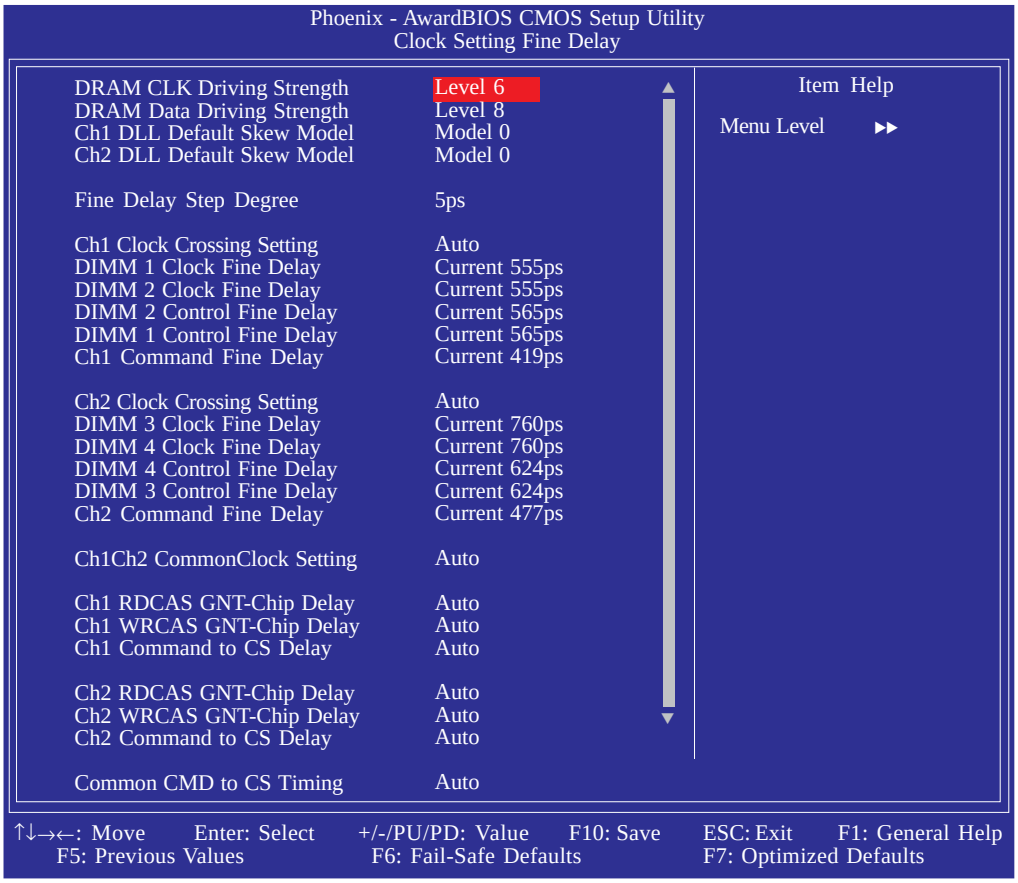
The options are Auto, and 0 to 31.

ALL PRE to Refresh

The options are Auto, and 1 to 15.

Clock Setting Fine Delay

Move the cursor to this field and press <Enter>. The following screen will appear.


Phoenix - AwardBIOS CMOS Setup Utility
Clock Setting Fine Delay
DRAM CLK Driving Strength Level 6
DRAM Data Driving Strength Level 8
Ch1 DLL Default Skew Model Model 0
Ch2 DLL Default Skew Model Model 0
Fine Delay Step Degree 5ps
Ch1 Clock Crossing Setting Auto
DIMM 1 Clock Fine Delay Current 555ps
DIMM 2 Clock Fine Delay Current 555ps
DIMM 2 Control Fine Delay Current 565ps
DIMM 1 Control Fine Delay Current 565ps
Ch1 Command Fine Delay Current 419ps
Ch2 Clock Crossing Setting Auto
DIMM 3 Clock Fine Delay Current 760ps
DIMM 4 Clock Fine Delay Current 760ps
DIMM 4 Control Fine Delay Current 624ps
DIMM 3 Control Fine Delay Current 624ps
Ch2 Command Fine Delay Current 477ps
Ch1Ch2 CommonClock Setting Auto
Ch1 RDCAS GNT-Chip Delay Auto
Ch1 WRCAS GNT-Chip Delay Auto
Ch1 Command to CS Delay Auto
Ch2 RDCAS GNT-Chip Delay Auto
Ch2 WRCAS GNT-Chip Delay Auto
Ch2 Command to CS Delay Auto
Common CMD to CS Timing Auto
Item Help
Menu Level ▸▸
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

The screen above list all the fields available in the Clock Setting Fine Delay submenu, for ease of reference in this manual. In the actual CMOS setup, you have to use the scroll bar to view the fields. The settings on the screen are for reference only. Your version may not be identical to this one.

DRAM Clock Driving Strength

This field is used to select the DRAM clock's driving strength.

DRAM Data Driving Strength

This field is used to select the DRAM data's driving strength.

Ch1/Ch2 DLL Default Skew Model

This field is used to select the DRAM's skew model.

Fine Delay Step Degree

This is used to select the fine delay step degree.

Ch1 Clock Crossing Setting

The options are Auto, More Aggressive, Aggressive, Nominal, Relaxed and More Relaxed.

DIMM 1 Clock Fine Delay, DIMM 2 Clock Fine Delay, DIMM 1 Control Fine Delay, DIMM 2 Control Fine Delay and Ch1 Command Fine Delay

The options are Current, 70ps to 2170ps.

Ch2 Clock Crossing Setting

The options are Auto, More Aggressive, Aggressive, Nominal, Relaxed and More Relaxed.

DIMM 3 Clock Fine Delay, DIMM 4 Clock Fine Delay, DIMM 3 Control Fine Delay, DIMM 4 Control Fine Delay and Ch2 Command Fine Delay

The options are Current, 70ps to 2170ps.

Ch1Ch2 CommonClock Setting

The options are Auto, More Aggressive, Aggressive, Nominal, Relaxed and More Relaxed.

Ch1 RDCAS GNT-Chip Delay

The options are Auto, 1CLK to 7CLK.

Ch1 WRCAS GNT-Chip Delay

The options are Auto, 1CLK to 7CLK.

Ch1 Command to CS Delay

The options are Auto, 1CLK to 7CLK.

Ch2 RDCAS GNT-Chip Delay

The options are Auto, 1CLK to 7CLK.

Ch2 WRCAS GNT-Chip Delay

The options are Auto, 1CLK to 7CLK.

Ch2 Command to CS Delay

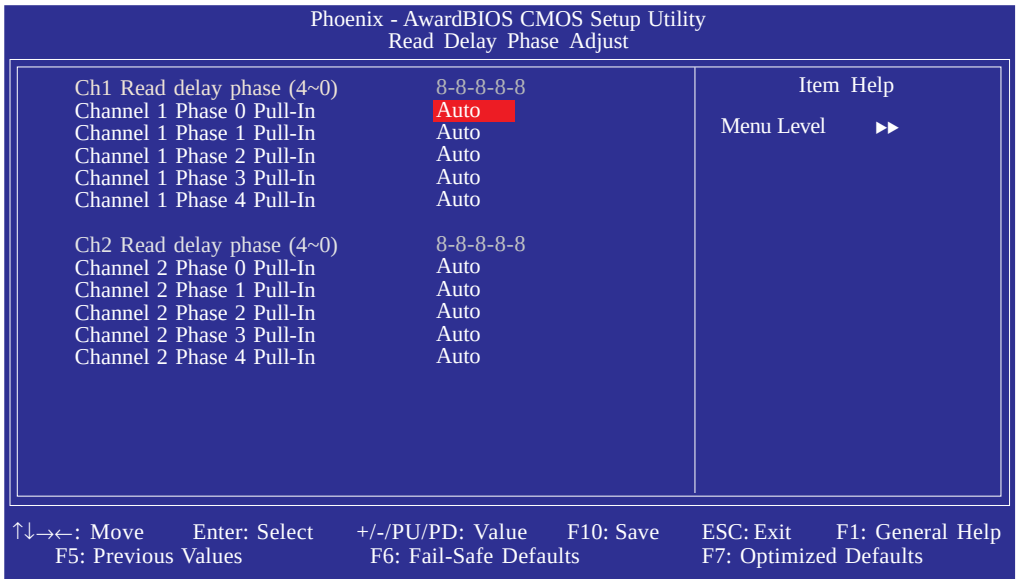
The options are Auto, 1CLK to 7CLK.

Common CMD to CS Timing

This field is used to select the CMD to CS timing.

Read Delay Phase Adjust

Move the cursor to this field and press <Enter>. The following screen will appear.


Phoenix - AwardBIOS CMOS Setup Utility
Read Delay Phase Adjust
Ch1 Read delay phase (4~0) 8-8-8-8-8
Channel 1 Phase 0 Pull-In Auto
Channel 1 Phase 1 Pull-In Auto
Channel 1 Phase 2 Pull-In Auto
Channel 1 Phase 3 Pull-In Auto
Channel 1 Phase 4 Pull-In Auto
Ch2 Read delay phase (4~0) 8-8-8-8-8
Channel 2 Phase 0 Pull-In Auto
Channel 2 Phase 1 Pull-In Auto
Channel 2 Phase 2 Pull-In Auto
Channel 2 Phase 3 Pull-In Auto
Channel 2 Phase 4 Pull-In Auto
Item Help
Menu Level ▸▸
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

The settings on the screen are for reference only. Your version may not be identical to this one.

Channel 1 Phase 0 Pull-In to Channel 1 Phase 4 Pull-In

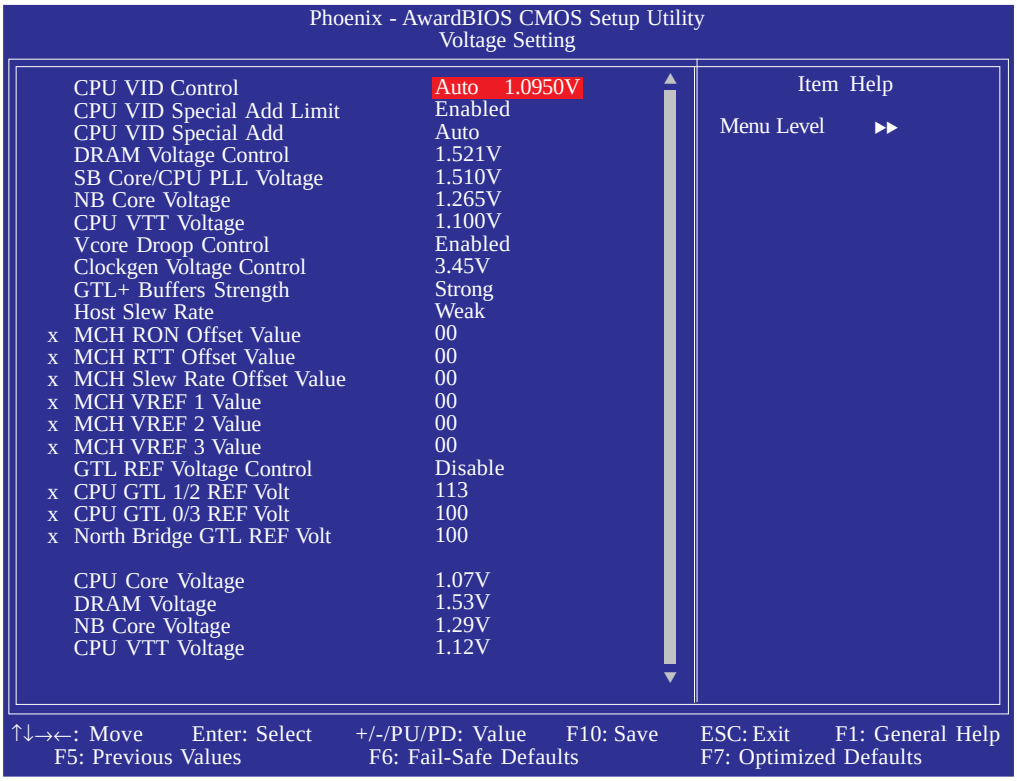
The options are Auto and Enabled.

Channel 2 Phase 0 Pull-In to Channel 2 Phase 4 Pull-In

The options are Auto and Enabled.

Voltage Setting

Move the cursor to this field and press <Enter>. The following screen will appear.


Phoenix - AwardBIOS CMOS Setup Utility
Voltage Setting
CPU VID Control Auto 1.0950V
CPU VID Special Add Limit Enabled
CPU VID Special Add Auto
DRAM Voltage Control 1.521V
SB Core/CPU PLL Voltage 1.510V
NB Core Voltage 1.265V
CPU VTT Voltage 1.100V
Vcore Droop Control Enabled
Clockgen Voltage Control 3.45V
GTL+ Buffers Strength Strong
Host Slew Rate Weak
x MCH RON Offset Value 00
x MCH RTT Offset Value 00
x MCH Slew Rate Offset Value 00
x MCH VREF 1 Value 00
x MCH VREF 2 Value 00
x MCH VREF 3 Value 00
GTL REF Voltage Control Disable
x CPU GTL 1/2 REF Volt 113
x CPU GTL 0/3 REF Volt 100
x North Bridge GTL REF Volt 100
CPU Core Voltage 1.07V
DRAM Voltage 1.53V
NB Core Voltage 1.29V
CPU VTT Voltage 1.12V
Item Help
Menu Level ▸▸
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

The screen above list all the fields available in the Voltage Setting submenu, for ease of reference in this manual. In the actual CMOS setup, you have to use the scroll bar to view the fields. The settings on the screen are for reference only. Your version may not be identical to this one.

CPU VID Control

This field allows you to manually adjust to a higher core voltage that is supplied to the CPU. If you want to use the CPU's default core voltage, leave this field in its default setting. The CPU's Vcore will be generated according to the CPU VID configuration.

Important:
Although this function is supported, we do not recommend that you use a higher voltage because unstable current may be supplied to the system board causing damage.

CPU VID Special Add Limit

The options are Enabled and Disabled.

CPU VID Special Add

This field provides more options to further adjust the voltage of the CPU.

DRAM Voltage Control

This field allows you to manually select higher voltage supplied to the DRAM.

SB Core/CPU PLL Voltage

The options are 1.510V to 2.380V.

NB Core Voltage

The options are 1.265V to 2.040V.

CPU VTT Voltage

This field is used to select the CPU's voltage.

Vcore Droop Control

This field is used to enable or disable the Vcore Droop control.

Clockgen Voltage Control

This field is used to select the clock generator's voltage.

GTL+ Buffers Strength

This field is used to configure the GTL+ Buffers Strength. The options are Strong and Weak.

Host Slew Rate

This field is used to configure the Host Slew Rate. The options are Strong and Weak.

GTL REF Voltage Control

The options are Enabled and Disabled.

CPU GTL 1/2 REF Volt and CPU GTL 0/3 REF Volt

These fields are used to configure the CPU GTL REF voltage.

Northbridge GTL REF Volt

This field is used to configure the Northbridge GTL REF voltage.

CPU Core Voltage

This field will show the CPU's current voltage.

DRAM Voltage

This field will show the DRAM's current voltage.

NB Core Voltage

This field will show the NB's current core voltage.

CPU VTT Voltage

This field will show the HT Link's current voltage.

CMOS Reloaded

The CMOS Reloaded submenu allows you to save different configurations and when needed, allows you to conveniently restore one of these previously saved configurations. Highlight CMOS Reloaded in the main menu then press <Enter>.

The screen above list all the fields available in the CMOS Reloaded submenu, for ease of reference in this manual. In the actual CMOS setup, you have to use the scroll bar to view the fields. The settings on the screen are for reference only. Your version may not be identical to this one.

CMOS Reloaded is especially helpful to overclockers who often go through the tiresome trial and error process of repeatedly changing the BIOS settings to come up with the most ideal overclocked setting. By being able to save and load the settings, it eliminates the tedious job of remembering several settings and/or repeatedly resetting settings during the trial process. The settings are stored in the SEEPROM. SEEPROM is divided into 5 banks - the backup bank and the 4 user defined banks.

Auto Save Bootable Setting

This field is used to automatically save the last bootable setting from CMOS to an area in the SEEPROM referred to as the backup bank. To use this function:

1. Set this field to Enabled.
2. Select "Save & Exit Setup" in the main menu then press <Enter>.
3. Type <Y> then press <Enter>.

If the changes to the setting allowed the system to boot, the setting will be stored in the SEEPROM. In other words, if the system did not boot up, the setting will not be stored. You may then follow the steps in the next section to load the last bootable setting.

Load Last Bootable Setting

If, during the trial and error process, the setting resulted to the system's instability or worse yet, not being able to boot up the system, please follow the steps below to use the Load function.

Note:
You can use the Load function only if you have set the "Auto Save Bootable Setting" to Enabled.

1. If the system did not boot up properly but you were able to enter the BIOS utility:
   a. Select "CMOS Reloaded" in the main menu then press <Enter>.
   b. Move the cursor to "Load Last Bootable Setting" then press "Load".
   c. Press <Y> to load the last bootable setting that was stored in the backup bank.
2. If you cannot enter the BIOS utility:
   a. Use the Clear CMOS jumper to clear the CMOS. Refer to chapter 2 for more information about clearing CMOS.
   b. Enter the BIOS utility then perform steps 1a to 1c.

Saving, Loading and Naming BIOS Settings

For overclockers who require different sets of settings for various system environments or operating systems, CMOS Reloaded allows you to save, load and name up to four sets of BIOS settings - in the "User Defined Setting Bank #1" to "User Defined Setting Bank #4" fields.

Save Setting to Bank With

This field is used to select the type of setting you would like saved to a User Defined Setting Bank when you use the "Save to this Bank" function of that bank.

Current BIOS Setting	This option will save the current BIOS setting to the User Defined Setting Bank.
Last BIOS Setting	This option will save the last saved BIOS setting to the User Defined Setting Bank.

User Defined Setting Bank #1/2/3/4

Bank Description
To name the BIOS setting, move the cursor to "Bank Description" then press <Enter>. You can enter up to 60 characters. Providing a name to the BIOS setting will allow you to easily remember the settings in the bank.

Save to this Bank
To save the BIOS setting, move the cursor to "Save to this Bank" then press <Enter>. Type <Y> then press <Enter>. This will save the current setting or the last saved setting to this bank; depending on the option selected in the "Save Setting to Bank With" field.

If you want to immediately reboot to use the new settings, make sure to save before you exit the BIOS setup utility by selecting "Y" in the "Save & Exit Setup" submenu.

Load from this Bank

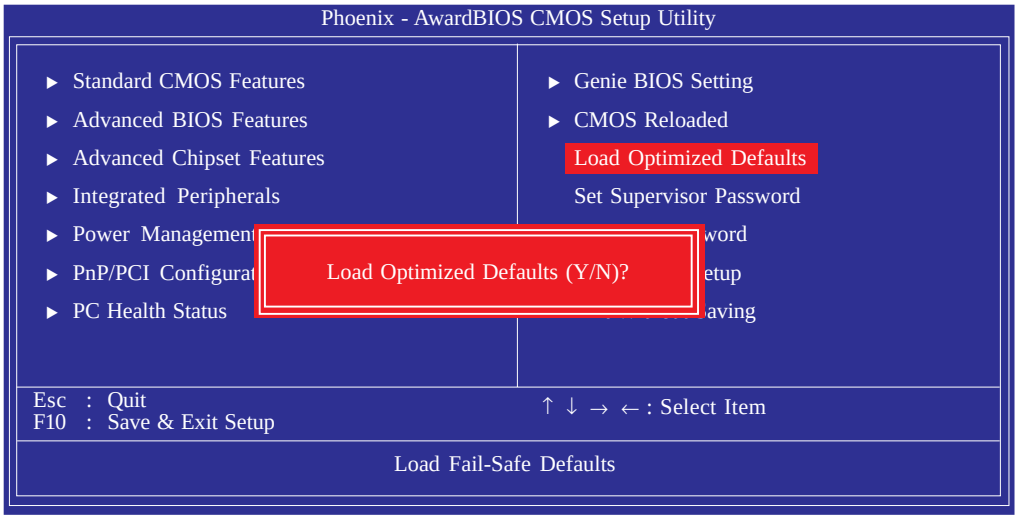
To load the setting saved in the bank, move the cursor to "Load from this Bank" then press <Enter>. The setting in this bank will replace the current setting. Make sure to save before you exit the BIOS setup utility by selecting "Y" in the "Save & Exit Setup" submenu.

Hotkey

You can now load a BIOS setting during system boot up; bypassing the lengthy process of entering the BIOS utility to load a setting. Move the cursor to "Hotkey" then press <Enter>. Select the key you would like to use to load the settings from the bank. When the system boots up, press the key to load the setting.

Load Optimized Defaults

The "Load Optimized Defaults" option loads optimized settings from the BIOS ROM. Use the default values as standard values for your system. Highlight this option in the main menu and press <Enter>.

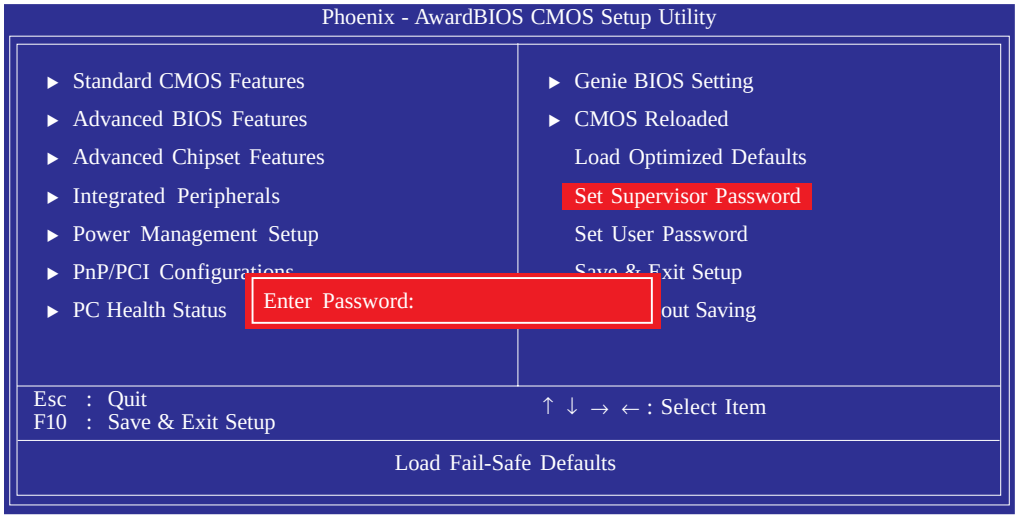


Type <Y> and press <Enter> to load the Setup default values.

Set Supervisor Password

If you want to protect your system and setup from unauthorized entry, set a supervisor's password with the "System" option selected in the Advanced BIOS Features. If you want to protect access to setup only, but not your system, set a supervisor's password with the "Setup" option selected in the Advanced BIOS Features. You will not be prompted for a password when you cold boot the system.

Use the arrow keys to highlight "Set Supervisor Password" and press <Enter>.



Type in the password. You are limited to eight characters. When done, the message below will appear:

Confirm Password:

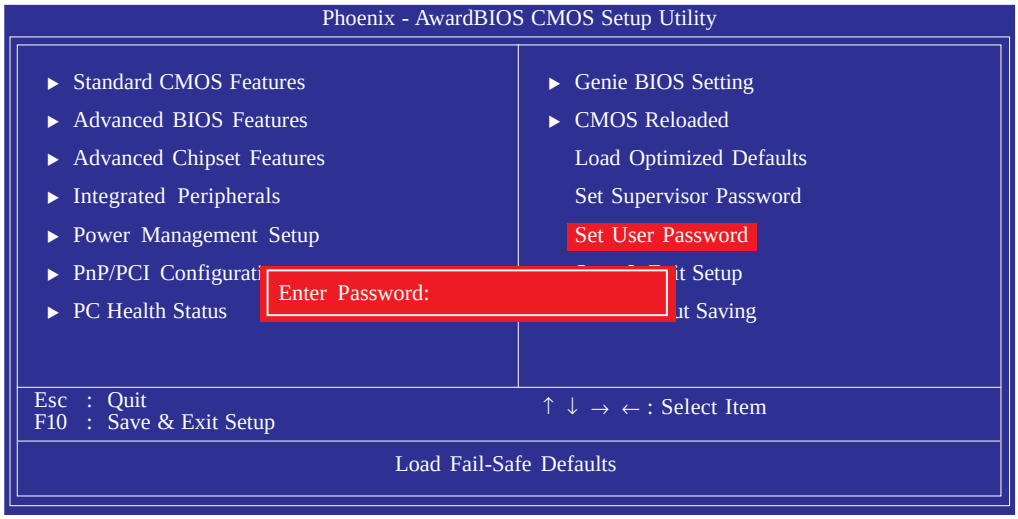
You are asked to verify the password. Type in exactly the same password. If you type in a wrong password, you will be prompted to enter the correct password again. To delete or disable the password function, highlight "Set Supervisor Password" and press <Enter>, instead of typing in a new password. Press the <Esc> key to return to the main menu.

Set User Password

If you want another user to have access only to your system but not to setup, set a user's password with the "System" option selected in the Advanced BIOS Features. If you want a user to enter a password when trying to access setup, set a user's password with the "Setup" option selected in the Advanced BIOS Features.

Using user's password to enter Setup allows a user to access only "Set User Password" that appears in the main menu screen. Access to all other options is denied.

Use the arrow keys to highlight "Set User Password" and press <Enter>.



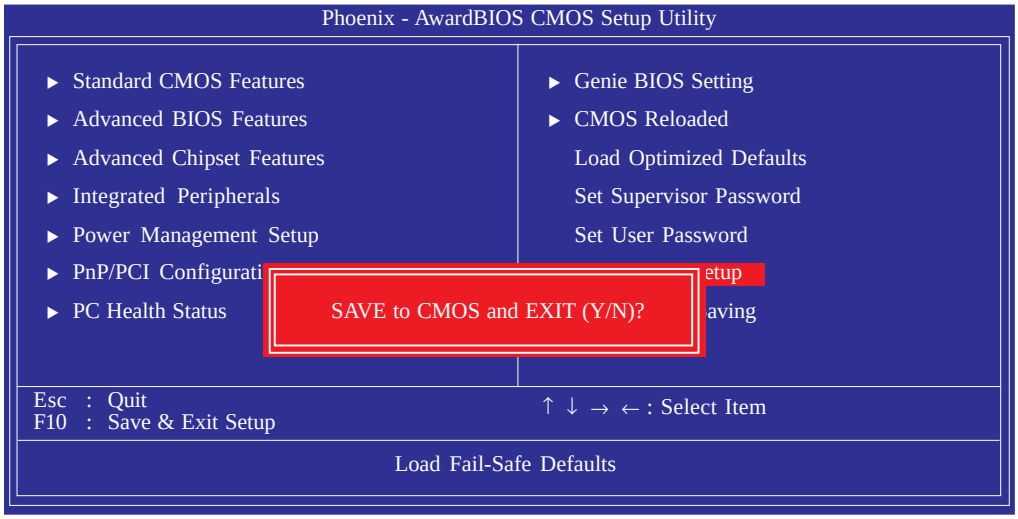
Type in the password. You are limited to eight characters. When done, the message below will appear:

Confirm Password:

You are asked to verify the password. Type in exactly the same password. If you type in a wrong password, you will be prompted to enter the correct password again. To delete or disable the password function, highlight "Set User Password" and press <Enter>, instead of typing in a new password. Press the <Esc> key to return to the main menu.

Save & Exit Setup

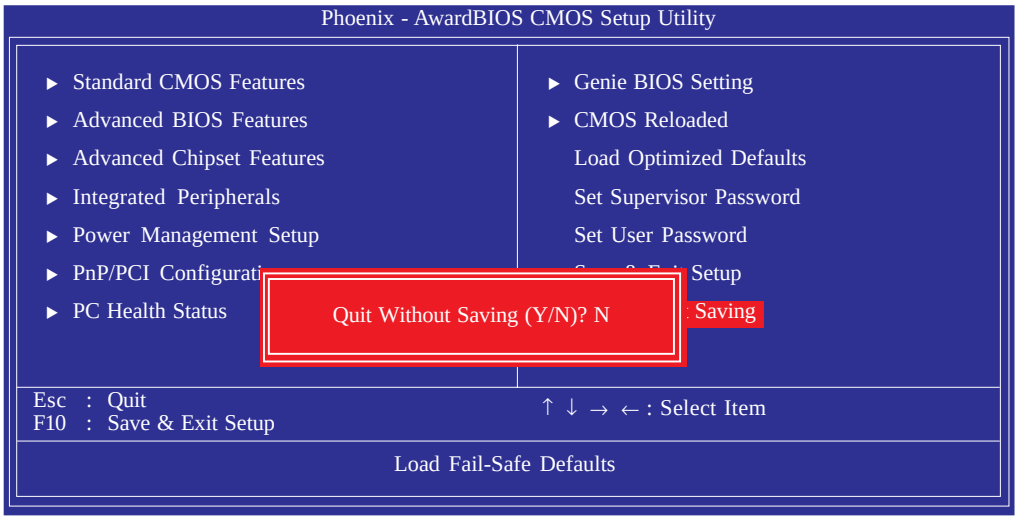
When all the changes have been made, highlight "Save & Exit Setup" and press <Enter>.



Type "Y" and press <Enter>. The modifications you have made will be written into the CMOS memory, and the system will reboot. You will once again see the initial diagnostics on the screen. If you wish to make additional changes to the setup, press <Ctrl> <Alt> <Esc> simultaneously or <Del> after memory testing is done.

Exit Without Saving

When you do not want to save the changes you have made, highlight "Exit Without Saving" and press <Enter>.



Type "Y" and press <Enter>. The system will reboot and you will once again see the initial diagnostics on the screen. If you wish to make any changes to the setup, press <Ctrl> <Alt> <Esc> simultaneously or <Del> after memory testing is done.

RAID BIOS

Intel RAID BIOS

The Intel RAID BIOS utility is used to configure and manage RAID on Serial ATA drives connected to SATA 1 to SATA 6.

When the system powers-up and all drives have been detected, the Intel RAID BIOS status message screen will appear. Press the <Ctrl> and <I> keys simultaneously to enter the utility. The utility allows you to build a RAID system on Serial ATA drives.

JMicron RAID BIOS

The JMicron RAID BIOS utility is used to configure and manage RAID on Serial ATA drives connected to SATA 7 and SATA 8.

When the system powers-up and all hard disk drives have been detected, the JMicron RAID BIOS status message screen will appear. Press the <Ctrl> and <J> keys simultaneously to enter the utility. The utility allows you to build a RAID system on Serial ATA drives.

Important:
Before creating RAID, make sure you have installed the Serial ATA drives and connected the data cables otherwise you won't be able to enter the RAID BIOS utility.

Refer to chapter 5 for steps in configuring RAID.

Updating the BIOS

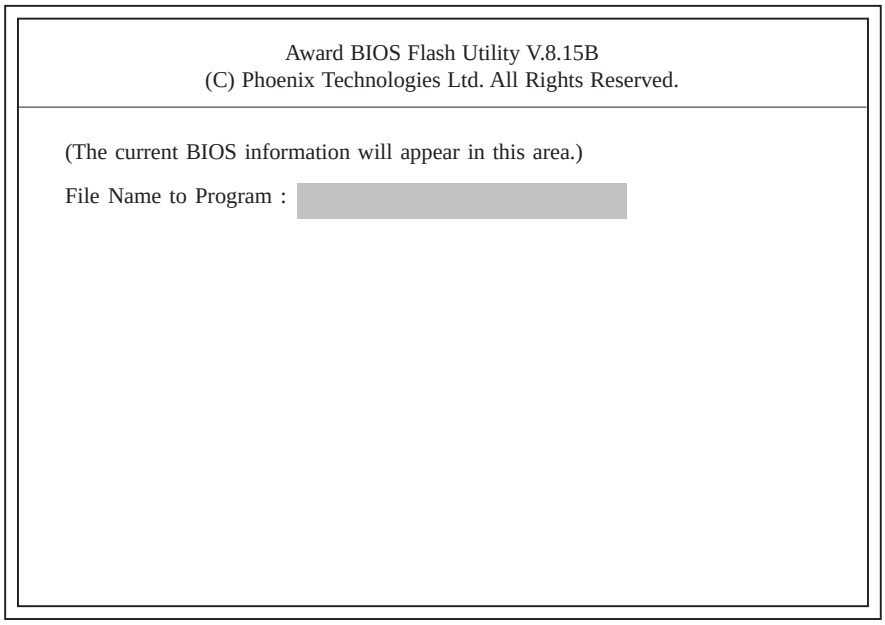
To update the BIOS, you will need the new BIOS file and a flash utility, AWDFLASH.EXE. You can download them from DFI's web site or contact technical support or your sales representative.

1. Save the new BIOS file along with the flash utility AWDFLASH.EXE to a floppy disk.

2. Reboot the system and enter the Award BIOS Setup Utility to set the first boot drive to "Floppy".

3. Save the setting and reboot the system.

4. After the system booted from the floppy disk, execute the flash utility by typing AWDFLASH.EXE. The following screen will appear.


Award BIOS Flash Utility V.8.15B
(C) Phoenix Technologies Ltd. All Rights Reserved.
(The current BIOS information will appear in this area.)
File Name to Program :

5. Type the new BIOS file name onto the gray area that is next to "File Name to Program" then press <Enter>.

6. The following will appear:

   Do You Want to Save BIOS (Y/N)

   This question refers to the current existing BIOS in your system. We recommend that you save the current BIOS and its flash utility; just in case you need to reinstall the BIOS. To save the current BIOS, press <Y> then enter the file name of the current BIOS. Otherwise, press <N>.

7. The following will then appear:

   Press "Y" to Program or "N" to Exit

8. Press <Y> to flash the new BIOS.

Chapter 4 - Supported Software

Drivers, Utilities and Software Applications

The CD that came with the system board contains drivers, utilities and software applications required to enhance the performance of the system board.

Insert the CD into a CD-ROM drive. The autorun screen will appear. If after inserting the CD, "Autorun" did not automatically start, please go directly to the root directory of the CD and double-click "Setup".

Intel Chipset Device Software

On the left side of the autorun screen, click the "CHIPSET" icon.

1. Click "Intel(R) Chipset Device Software" on the main menu.

2. Setup is now ready to install the utility. Click Next.

Intel® Chipset Device Software
Intel® Chipset Device Software
Welcome to the Setup Program
This setup program will install the Intel® Chipset Device Software onto this computer. It is strongly recommended that you exit all Windows* programs before continuing.
< Back
Next >
Cancel
Intel® Installation Framework

3. Read the license agreement then click Yes.

Intel® Chipset Device Software
Intel® Chipset Device Software
License Agreement
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
< Back
Yes
No
Intel® Installation Framework

4. Go through the readme document for system requirements and installation tips then click Next.

Intel® Chipset Device Software
Intel® Chipset Device Software
Readme File Information
Refer to the Readme file below to view the system requirements and installation information.
Press the Page Down key to view the rest of the file.
* Product: Intel(R) Chipset Device Software
* Release: Production Version
* Version: 8.3.0.1013
* Target Chipset#: Q33/G33/G31/P35
* Date: March 05 2007
< Back
Next >
Cancel
Intel® Installation Framework

5. Setup is now installing the driver. Click Next to continue.

Intel® Chipset Device Software
Intel® Chipset Device Software
Setup Progress
Please wait while the following setup operations are performed:
Installing Driver: Intel(R) ICH9 Family USB Universal Host Controller - 2938
Version: 8.3.0.1011
Installing Driver: Intel(R) ICH9 Family USB Universal Host Controller - 2939
Version: 8.3.0.1011
Installing Driver: Intel(R) ICH9 Family USB2 Enhanced Host Controller - 293A
Version: 8.3.0.1011
Installing Driver: Intel(R) ICH9 Family USB2 Enhanced Host Controller - 293C
Version: 8.3.0.1011
Click Next to continue.
Next
Intel® Installation Framework

6. Click "Yes, I want to restart this computer now" then click Finish.

   Restarting the system will allow the new software installation to take effect.

Intel® Chipset Device Software
Intel® Chipset Device Software
Setup Is Complete
intel
You must restart this computer for the changes to take effect. Would you like to restart the computer now?
Yes, I want to restart this computer now.
No, I will restart this computer later.
Click Finish, then remove any installation media from the drives.
Finish
Intel® Installation Framework

Graphics Drivers

The CD provides both ATI Radeon driver and nVidia GForce 8 series driver. Install the driver according to the graphics card that you are using.

For ATI Radeon graphics card, select ATI Radeon Driver.

For nVidia graphics card, select nVidia GForce 8 Series Driver.

Realtek Audio Driver

On the left side of the autorun screen, click the "AUDIO" icon.

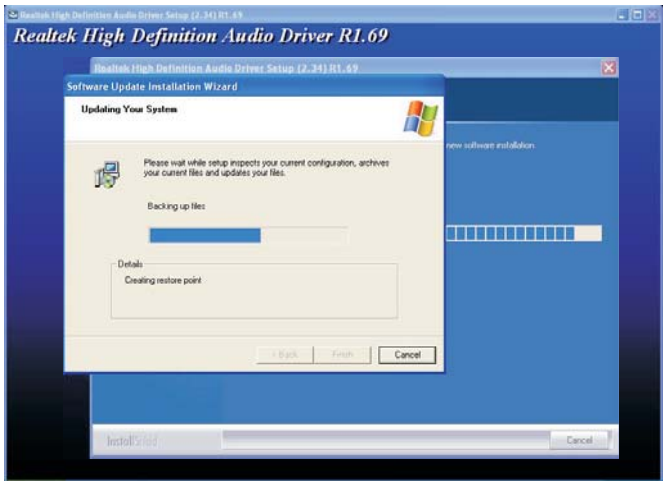
1. Click "Realtek Audio Driver" on the main menu.

2. Setup is now ready to install the audio driver. Click Next.

Realtek High Definition Audio Driver R1.69
Realtek High Definition Audio Driver Setup (2.34) R1.69
Welcome to the InstallShield Wizard for Realtek High Definition Audio Driver
Cancel

3. Setup is currently configuring the new driver's installation.

4. Setup is now processing the settings.

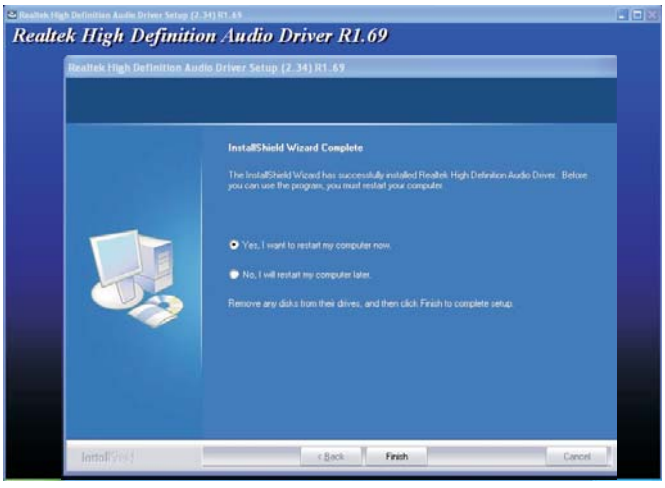

Realtek High Definition Audio Driver R1.69
Software Update Installation Wizard
Updating Your System
Please wait while setup inspects your current configuration, archives your current files and updates your files.
Backing up files
Details
Creating restore point
Cancel

5. Select the desired option then click Next.

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).
Read our privacy policy
Can Windows connect to Windows Update to search for software?
Yes, this time only
Yes, now and every time I connect a device
No, not this time
Click Next to continue.
< Back
Next >
Cancel

6. Click "Yes, I want to restart my computer now" then click Finish.

   Restarting the system will allow the new software installation to take effect.


Realtek High Definition Audio Driver R1.69
InstallShield Wizard Complete
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
< Back
Finish
Cancel

4 Supported Software

Marvell LAN Driver

On the left side of the autorun screen, click the "NETWORK" icon.

1. Click "Marvell LAN Driver" on the main menu.

Main Board Utility
LANParty UT X48-T3RS
Intel X48 / Network Drivers
Marvell LAN Drivers - 32bits
Marvell LAN Drivers - 64bits
Marvell Teaming Utility

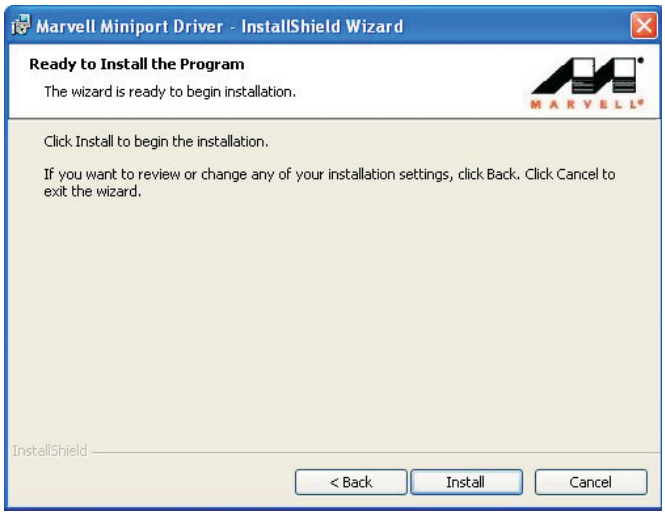
2. Setup is now ready to install the driver. Click Next.

Marvell Miniport Driver - InstallShield Wizard
MARVELL
Welcome to the InstallShield Wizard for Marvell Miniport Driver
The InstallShield(R) Wizard will install Marvell Miniport Driver on your computer. To continue, click Next.
WARNING: This program is protected by copyright law and international treaties.
< Back
Next >
Cancel

3. Read the license agreement then click "I accept the terms in the license agreement". Click Next.

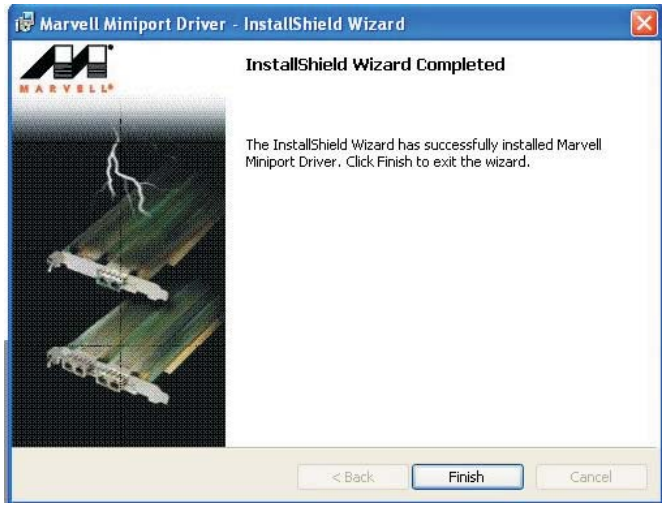
Marvell Miniport Driver - InstallShield Wizard
License Agreement
Please read the following license agreement carefully.
MARVELL
MARVELL END USER LIMITED USE LICENSE AGREEMENT
The use of the "Software," as defined herein, is exclusively governed by the terms of this End User Limited Use License Agreement (the "Agreement") between MARVELL INTERNATIONAL LTD ("MARVELL") and you ("Licensee").
BY OPENING THE SOFTWARE PACKAGE AND CLICKING "I do accept the license agreement" OF ANY ELECTRONIC VERSION OF THIS AGREEMENT, YOU ACKNOWLEDGE THAT YOU HAVE READ THE AGREEMENT AND AGREE TO BE BOUND BY ITS TERMS AND CONDITIONS. IF YOU DO NOT AGREE TO
I accept the terms in the license agreement
I do not accept the terms in the license agreement
InstallShield
< Back
Next >
Cancel

4. Click Install to begin the installation.


Marvell Miniport Driver - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

5. After completing installation, click Finish to exit setup.

   Reboot your system for the new software installation to take effect.


Marvell Miniport Driver - InstallShield Wizard
InstallShield Wizard Completed
The InstallShield Wizard has successfully installed Marvell Miniport Driver. Click Finish to exit the wizard.
< Back
Finish
Cancel

Marvell Teaming Utility

On the left side of the autorun screen, click the "NETWORK" icon.

1. Click "Marvell Teaming Utility" on the main menu.

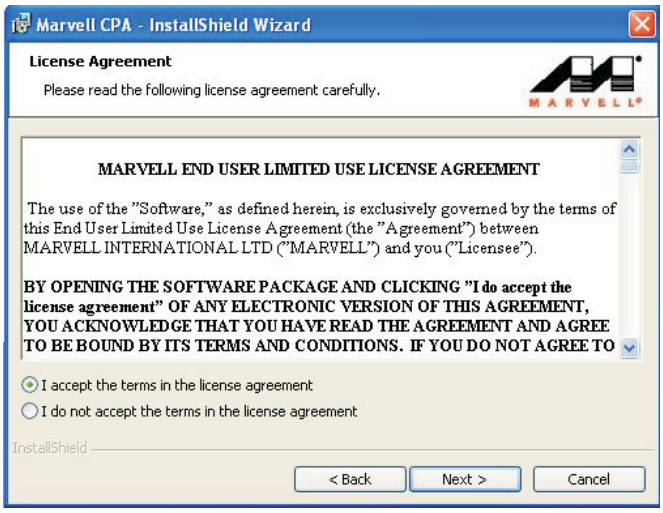
2. Setup is now preparing the wizard.

InstallShield Wizard
Marvell CPA Setup is preparing the InstallShield Wizard, which will guide you through the program setup process. Please wait.
Configuring Windows Installer
Cancel

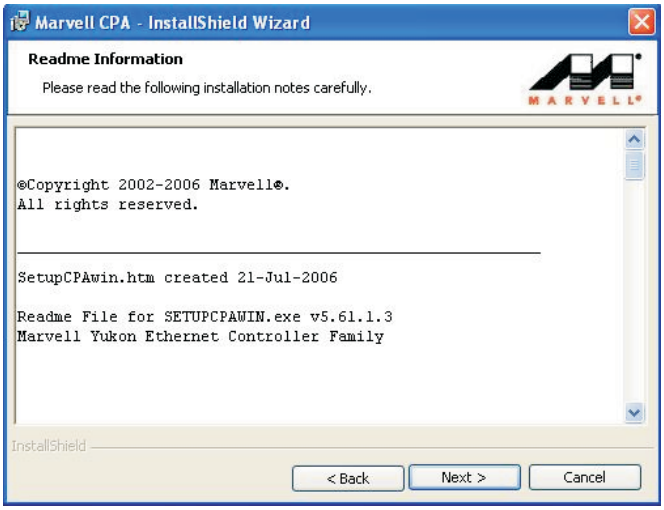
3. Setup is now ready to install the utility. Click Next.

Marvell CPA - InstallShield Wizard
Welcome to the InstallShield Wizard for Marvell CPA
The InstallShield(R) Wizard will install Marvell CPA on your computer. To continue, click Next.
WARNING: This program is protected by copyright law and international treaties.
< Back
Next >
Cancel

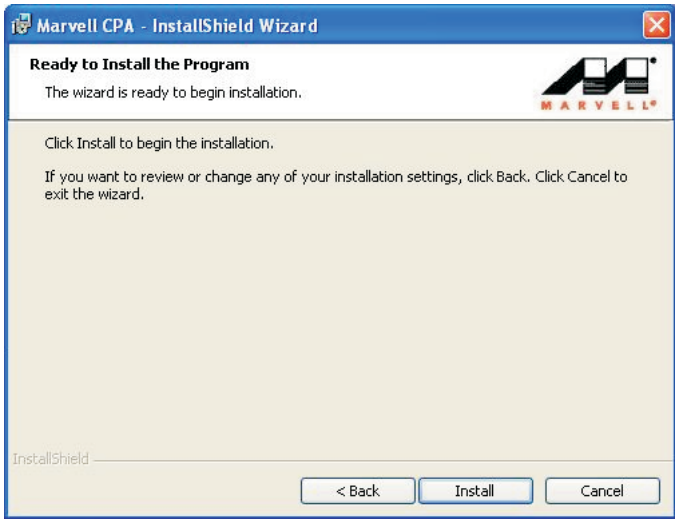
4. Read the license agreement, click "I accept the terms in the license agreement." then click Next.


Marvell CPA - InstallShield Wizard
License Agreement
Please read the following license agreement carefully.
MARVELL END USER LIMITED USE LICENSE AGREEMENT
The use of the "Software," as defined herein, is exclusively governed by the terms of this End User Limited Use License Agreement (the "Agreement") between MARVELL INTERNATIONAL LTD ("MARVELL") and you ("Licensee").
BY OPENING THE SOFTWARE PACKAGE AND CLICKING "I do accept the license agreement" OF ANY ELECTRONIC VERSION OF THIS AGREEMENT, YOU ACKNOWLEDGE THAT YOU HAVE READ THE AGREEMENT AND AGREE TO BE BOUND BY ITS TERMS AND CONDITIONS. IF YOU DO NOT AGREE TO
I accept the terms in the license agreement
I do not accept the terms in the license agreement
InstallShield
< Back
Next >
Cancel

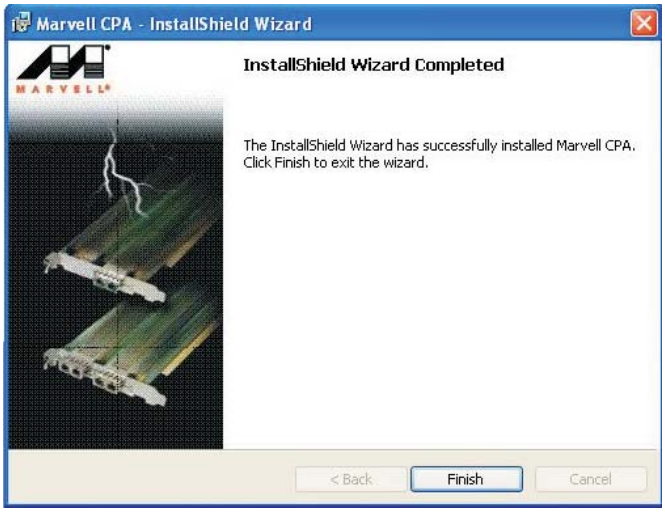
5. Go through the readme document for system requirements and installation tips then click Next.



6. Click Install to begin the installation.


Marvell CPA - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

7. Click Finish.


Marvell CPA - InstallShield Wizard
InstallShield Wizard Completed
The InstallShield Wizard has successfully installed Marvell CPA. Click Finish to exit the wizard.
< Back
Finish
Cancel

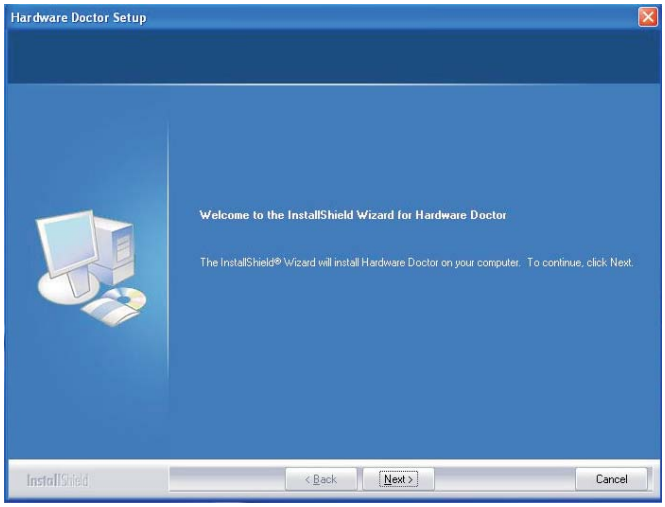
Smart Guardian

The Smart Guardian utility is capable of monitoring the system's temperature, fan speed, voltage, etc. and allows you to manually set a range (Highest and Lowest Limit) to the items being monitored. If the settings/values are over or under the set range, a warning message will pop-up. The utility can also be configured so that a beeping alarm will sound whenever an error occurs. We recommend that you use the "Default Setting" which is the ideal setting that would keep the system in good working condition.

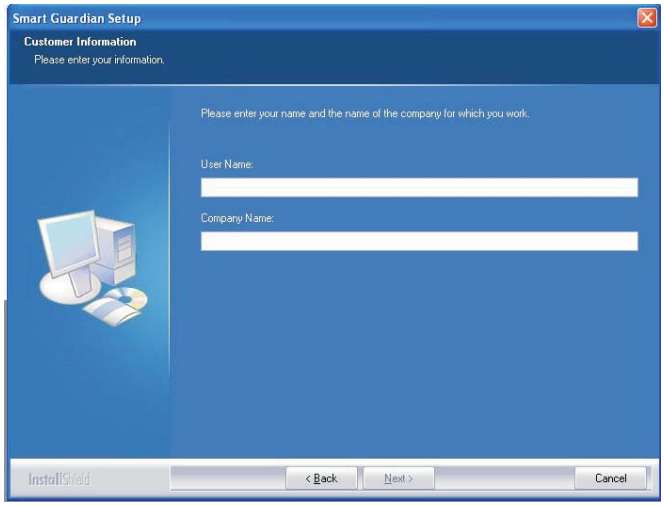
On the left side of the autorun screen, click the "TOOLS" icon.

1. Click "Smart Guardian" on the main menu.

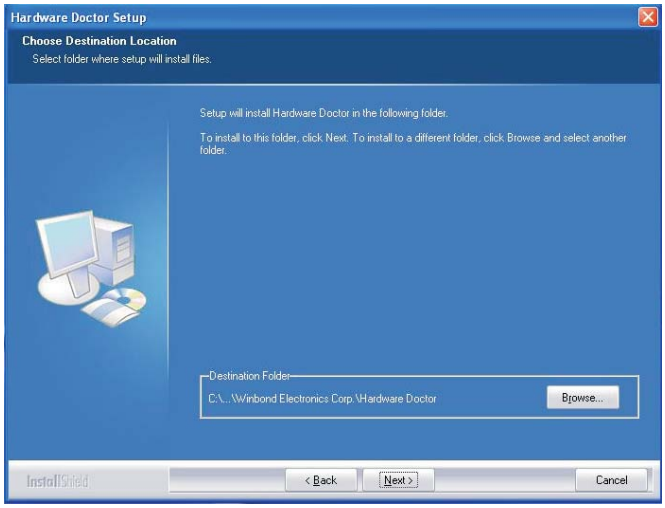
2. Setup is now ready to install the utility. Click Next.


Hardware Doctor Setup
Welcome to the InstallShield Wizard for Hardware Doctor
The InstallShield® Wizard will install Hardware Doctor on your computer. To continue, click Next.
InstallShield
< Back
Next >
Cancel

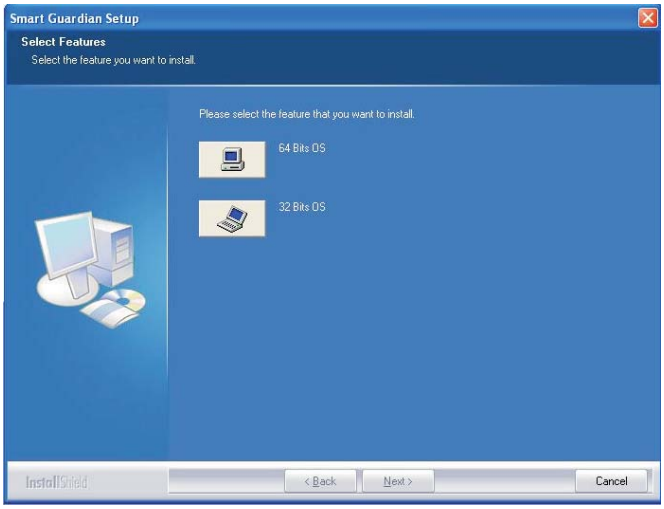
3. Fill in the necessary information then click Next..



4. Click Next to install or click Browse to select another folder.

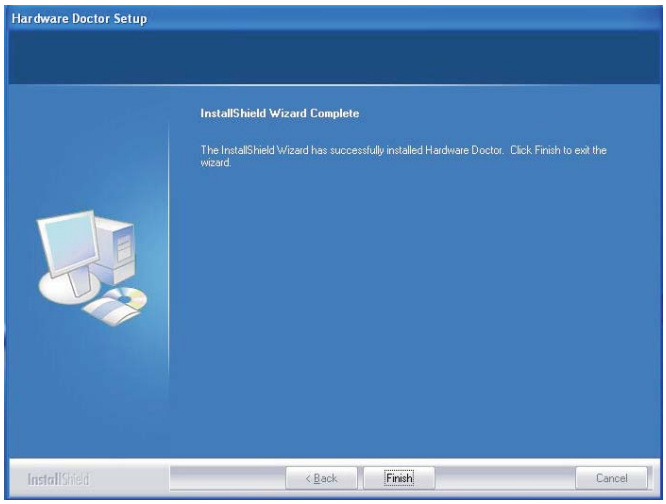

Hardware Doctor Setup
Choose Destination Location
Select folder where setup will install files.
Setup will install Hardware Doctor in the following folder.
To install to this folder, click Next. To install to a different folder, click Browse and select another folder.
Destination Folder
C:\...\Winbond Electronics Corp.\Hardware Doctor
Browse...
InstallShield
< Back
Next >
Cancel

5. Select an option in accordance to the system that you are using then click Next.



6. After completing installation, click Finish to exit setup.

   Restarting the system will allow the utility to take effect.



4 Supported Software

USB 2.0 Drivers

Windows® XP

If your Windows® XP CD already includes Service Pack 1, the USB 2.0 driver will automatically install when you install the operating system. If the CD does not include Service Pack 1, it is available for download at Microsoft's Windows Update website.

Windows® 2000

If your Windows® 2000 CD already includes Service Pack 4, the USB 2.0 driver will automatically install when you install the operating system. If the CD does not include Service Pack 4, it is available for download at Microsoft's Windows Update website.

Installation Notes

1. "Autorun" ONLY supports the Windows® XP and Windows® Vista operating systems. If after inserting the CD, "Autorun" did not automatically start (which is, the Mainboard Utility CD screen did not appear), please go directly to the root directory of the CD and double-click "Setup".

2. The drivers for Windows® 2000 are also included in the CD however "Autorun" is not supported for this operating system. Therefore you must manually install the drivers from the respective folders of each driver.

3. All steps or procedures to install software drivers are subject to change without notice as the softwares are occassionally updated. Please contact technical support or your sales representative for the latest version of the drivers or software applications.

Chapter 5 - RAID

The Intel ICH9R chip alows configuring RAID on Serial ATA drives connected to SATA 1 to SATA 6. It supports RAID 0, RAID 1, RAID 0+1 and RAID 5.

The JMicron JMB363 chip allows configuring RAID on another 2 Serial ATA drives connected to SATA 7 and SATA 8. It supports RAID 0 and RAID 1.

RAID Levels

RAID 0 (Striped Disk Array without Fault Tolerance)

RAID 0 uses two new identical hard disk drives to read and write data in parallel, interleaved stacks. Data is divided into stripes and each stripe is written alternately between two disk drives. This improves the I/O performance of the drives at different channel; however it is not fault tolerant. A failed disk will result in data loss in the disk array.

RAID 1 (Mirroring Disk Array with Fault Tolerance)

RAID 1 copies and maintains an identical image of the data from one drive to the other drive. If a drive fails to function, the disk array management software directs all applications to the other drive since it contains a complete copy of the drive's data. This enhances data protection and increases fault tolerance to the entire system. Use two new drives or an existing drive and a new drive but the size of the new drive must be the same or larger than the existing drive.

RAID 0+1 (Striping and Mirroring)

RAID 0+1 is a combination of data striping and data mirroring providing the benefits of both RAID 0 and RAID 1. Use four new drives or an existing drive and three new drives for this configuration.

RAID 5

RAID 5 stripes data and parity information across hard drives. It is fault tolerant and provides better hard drive performance and more storage capacity.

English

Settings

To enable the RAID function, the following settings are required.

1. Connect the Serial ATA drives.
2. Configure Serial ATA in the Award BIOS.
3. Configure RAID in the RAID BIOS.
4. Install the RAID driver during OS installation.
5. Install the Intel Matrix Storage Manager
6. Install the JMB36X Driver

Step 1: Connect the Serial ATA Drives

Refer to chapter 2 for details on connecting the Serial ATA drives.

Important:

1. Make sure you have installed the Serial ATA drives and connected the data cables otherwise you won't be able to enter the RAID BIOS utility.
2. Treat the cables with extreme caution especially while creating RAID. A damaged cable will ruin the entire installation process and operating system. The system will not boot and you will lost all data in the hard drives. Please give special attention to this warning because there is no way of recovering back the data.

Step 2: Configure Serial ATA in the Award BIOS

1. Power-on the system then press <Del> to enter the main menu of the Award BIOS.
2. Select the Integrated Peripherals submenu - OnChip IDE Device section of the BIOS.
3. Configure Serial ATA in the appropriate fields.
4. Press <Esc> to return to the main menu of the BIOS setup utility. Select "Save & Exit Setup" then press <Enter>.
5. Type <Y> and press <Enter>.
6. Reboot the system.

tep 3: Configure RAID in the RAID BIOS

Configure RAID in the Intel RAID BIOS

When the system powers-up and all drives have been detected, the Intel RAID BIOS status message screen will appear. Press the <Ctrl> and <I> keys simultaneously to enter the utility. The utility allows you to build a RAID system on Serial ATA drives.

Configure RAID in the JMicron RAID BIOS

When the system powers-up and all hard disk drives have been detected, the JMicron RAID BIOS status message screen will appear. Press the <Ctrl> and <J> keys simultaneously to enter the utility. The utility allows you to build a RAID system on Serial ATA drives.

Step 4: Install the RAID Driver During OS Installation

The RAID driver must be installed during the Windows® XP or Windows® 2000 installation using the F6 installation method. This is required in order to install the operating system onto a hard drive or RAID volume when in RAID mode or onto a hard drive when in AHCI mode.

1. Start Windows Setup by booting from the installation CD.
2. Press <F6> when prompted in the status line with the 'Press F6 if you need to install a third party SCSI or RAID driver' message.
3. Press <S> to "Specify Additional Device".
4. At this point you will be prompted to insert a floppy disk containing the RAID driver. Insert the provided RAID driver diskette.
5. Locate for the drive where you inserted the diskette then select RAID or AHCI controller that corresponds to your BIOS setup. Press <Enter> to confirm.

You have successfully installed the driver. However you must continue installing the OS. Leave the floppy disk in the floppy drive until the system reboots itself because Windows setup will need to copy the files again from the floppy disk to the Windows installation folders. After Windows setup has copied these files again, remove the floppy diskette so that Windows setup can reboot as needed.

Step 5: Install the Intel Matrix Storage Manager

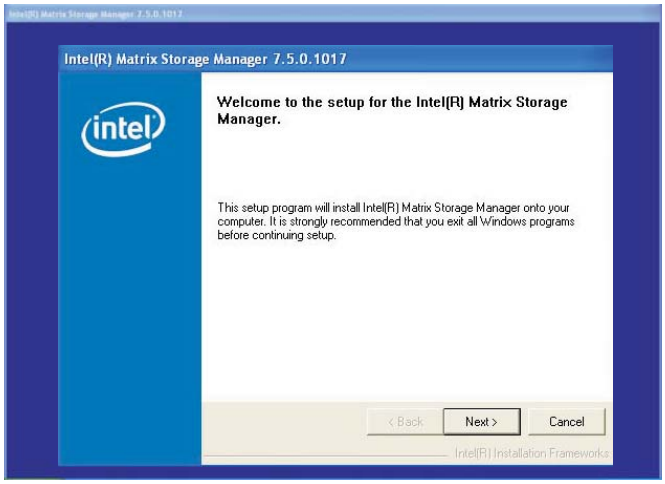
The Intel Matrix Storage Manager can be installed from within Windows. It allows RAID volume management (create, delete, migrate) from within the operating system. It will also display useful SATA device and RAID volume information. The user interface, tray icon service and monitor service allow you to monitor the current status of the RAID volume and/or SATA drives. It enables enhanced performance and power management for the storage subsystem.

1. Insert the CD into a CD-ROM drive.

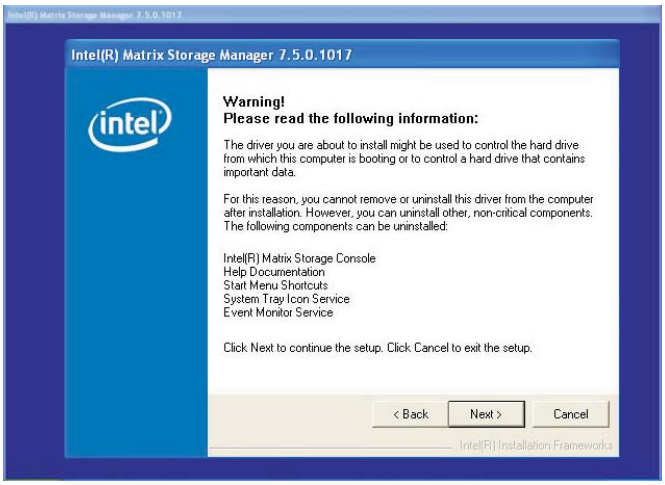
2. On the left side of the autorun screen, click the "CHIPSET" icon.

3. Click "Intel(R) Matrix Storage Manager" on the main menu.

4. Setup is now ready to install the utility. Click Next.


Intel(R) Matrix Storage Manager 7.5.0.1017
Welcome to the setup for the Intel(R) Matrix Storage Manager.
This setup program will install Intel(R) Matrix Storage Manager onto your computer. It is strongly recommended that you exit all Windows programs before continuing setup.
< Back
Next >
Cancel
Intel(R) Installation Frameworks

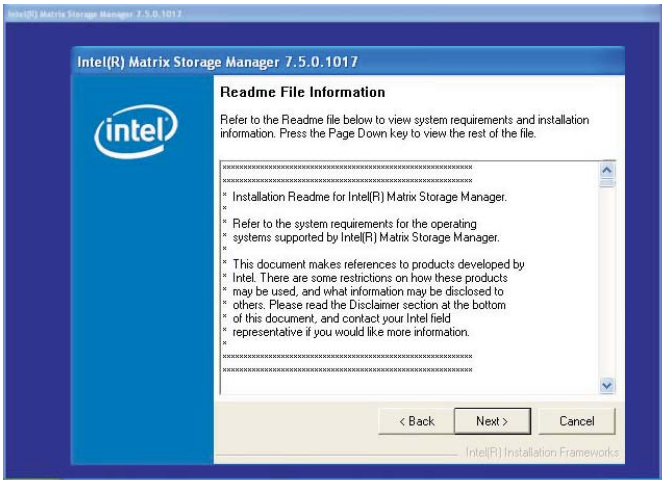
5. Read the warning carefully then click Next.


Intel(R) Matrix Storage Manager 7.5.0.1017
Warning!
Please read the following information:
The driver you are about to install might be used to control the hard drive from which this computer is booting or to control a hard drive that contains important data.
For this reason, you cannot remove or uninstall this driver from the computer after installation. However, you can uninstall other, non-critical components. The following components can be uninstalled:
Intel(R) Matrix Storage Console
Help Documentation
Start Menu Shortcuts
System Tray Icon Service
Event Monitor Service
Click Next to continue the setup. Click Cancel to exit the setup.
< Back
Next >
Cancel
Intel(R) Installation Frameworks

6. Read the license agreement then click Yes.

Intel(R) Matrix Storage Manager 7.5.0.1017
License Agreement
Please read the following license agreement carefully. Press the Page Down key to view the rest of the agreement.
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
< Back
Yes
No
Intel(R) Installation Frameworks

7. Go through the readme document to view system requirements and installation information then click Next.


Intel(R) Matrix Storage Manager 7.5.0.1017
Readme File Information
Refer to the Readme file below to view system requirements and installation information. Press the Page Down key to view the rest of the file.
* Installation Readme for Intel(R) Matrix Storage Manager.
* Refer to the system requirements for the operating
* systems supported by Intel(R) Matrix Storage Manager.
* This document makes references to products developed by
* Intel. There are some restrictions on how these products
* may be used, and what information may be disclosed to
* others. Please read the Disclaimer section at the bottom
* of this document, and contact your Intel field
* representative if you would like more information.
< Back
Next >
Cancel
Intel(R) Installation Frameworks

8. Follow the remainder of the steps shown on the screen; clicking "next" each time you finish a step.

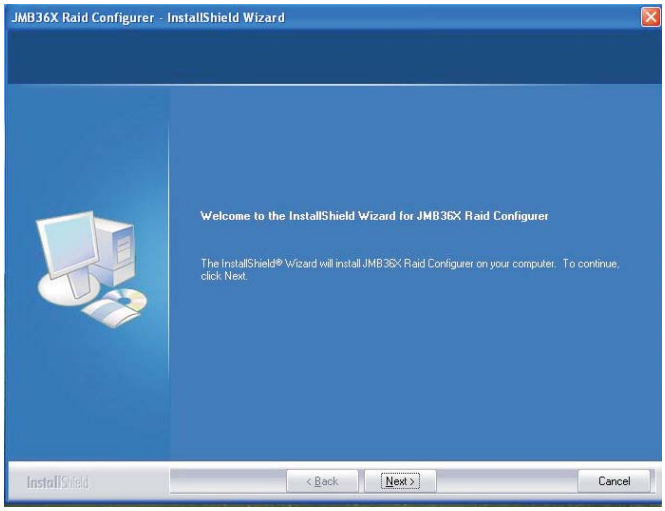
9. Click Finish to complete installation and reboot the system.

Step 6: Install the JMB36X Driver

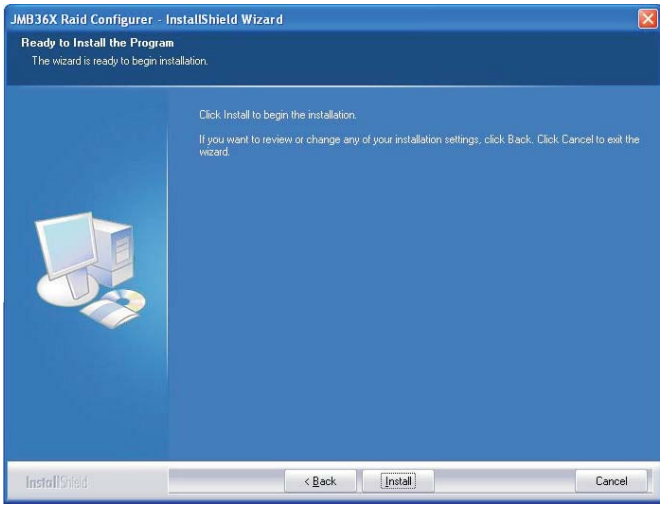
On the left side of the autorun screen, click the "RAID" icon.

1. Click "JMB36X Driver" on the main menu.

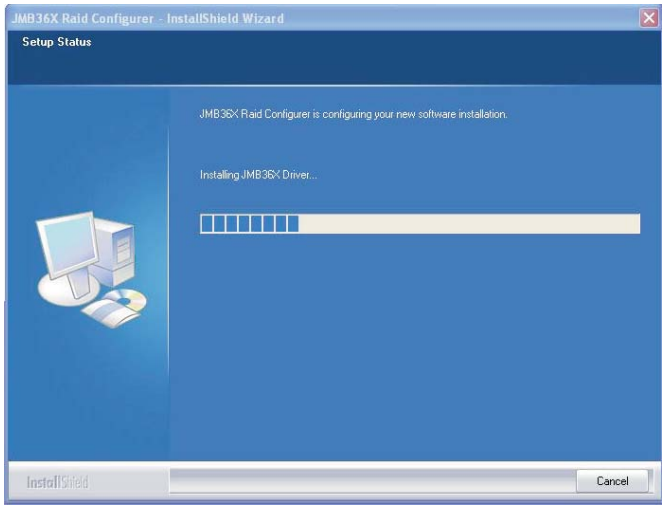
2. Setup is now ready to install the driver. Click Next.


JMB36X Raid Configurer - InstallShield Wizard
Welcome to the InstallShield Wizard for JMB36X Raid Configurer
The InstallShield® Wizard will install JMB36X Raid Configurer on your computer. To continue, click Next.
InstallShield
< Back
Next >
Cancel

3. Click Install to begin the installation.


JMB36X Raid Configurer - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

4. Setup is now installing the driver.



5. Follow the remainder of the steps listed on the screen; clicking "next" each time you finish a step.

6. Click "Yes, I want to restart my computer now" then click Finish.

   Restarting the system will allow the new software installation to take effect.

JMB36X Raid Configurer - InstallShield Wizard
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed JMB36X Raid Configurer. Before you can use the program, you must restart your computer.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
InstallShield
< Back
Finish
Cancel

Chapter 6 - ATI CrossFire Technology

ATI's CrossFire technology drives your PC to a new peak of performance. By connecting a Radeon CrossFire Edition graphics card and a CrossFire-ready graphics card, the power of these multiple GPUs (Graphics Processing Units) within the system will accelerate your gaming performance and improve image quality.

Aside from dual GPU for 3D rendering, CrossFire's new feature - asymmetric processing technology, allows adding another dedicated GPU for physics processing. The 3 GPUs simultaneously handle Data Parallel Processing (DPP) computing tasks such as game rendering and physics in a single system. This provides more realistic cutting edge 3D graphics to run at high resolutions.

How CrossFire Works

CrossFire's key objective is to maximize the speed of a multi-GPU system. This is achieved by dividing the rendering workload to each of the two GPUs. When each GPU has completed its assigned tasks for a given frame, the Compositing Engine on the CrossFire Edition graphics card combines the results from each GPU (according to the selected operating mode) then sends the final frames out to the display device. The result will be a complete frame rendered at up to twice the performance of a single graphics card.

3D games are made up of a number of different tasks such as input processing, game state updating, artificial intelligence, physics, rendering, networking, audio, etc. The Data Parallel Processing (DPP) computing tasks simultaneously executes a common set of instructions across a large set of input data. Besides rendering, the detailed physics simulations allow these GPUs to take on an expanded role in game computing. Multiple GPUs can enhance a game by providing generous amounts of additional computing power for certain specific tasks.

Features

Regardless of the type of operating mode used, the completed frames from both GPUs are sent to the Compositing Engine on the CrossFire Edition graphics card, which then sends them on to the display device.

- **Supertile Mode**

  Supertiling divides your screen image into subsections like "tiles" in alternating tile pattern such that half of the tiles are assigned to each of the two GPUs.

- **Scissor Mode**

  In Scissor mode, each frame is split into two sections, either horizontal or vertical, with each section being processed by one GPU.

- **Alternate Frame Rendering (AFR)**

  In AFR mode, all even frames are rendered on one GPU, while all odd frames are rendered on the other.

- **Super AA (Anti-Aliasing)**

  The Super AA mode provides even higher quality anti-aliasing on multi-GPU systems. It works by having each GPU render the same frame with anti-aliasing enabled but using different sample locations for each. When both versions of the frame are completed, they are blended in the CrossFire Compositing engine. The resulting image is twice the number of samples, so 4x and 6x AA become 8x and 12x Super AA respectively.

Graphics Cards Requirements

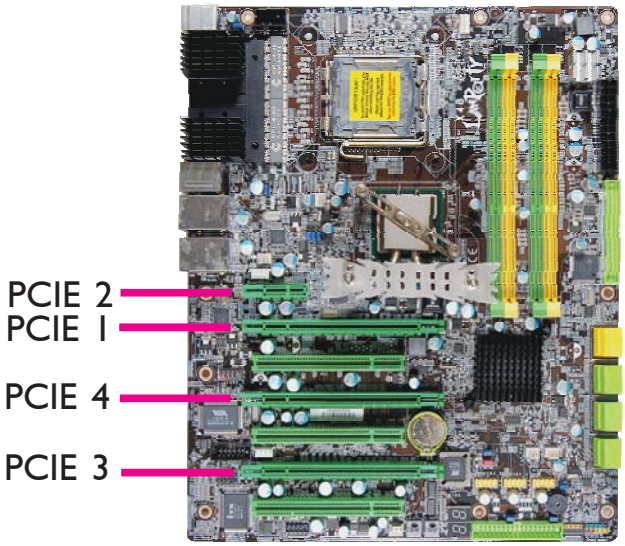
1. One Radeon® X850 / Radeon® X800 CrossFire Edition graphics card.
2. One CrossFire-ready Radeon® X850 or Radeon® X800 graphics card.

   The Radeon® X850 CrossFire Edition card works with any standard PCI Express Radeon X850 graphics card (Radeon X850 PRO, Radeon X850 XT or Radeon X850 XT Platinum Edition) from ATI or any of its partners including cards previously sold.

   The Radeon® X800 CrossFire Edition card works with any standard PCI Express Radeon X800 graphics card (Radeon X800, Radeon X800 PRO, Radeon X800 XL, Radeon X800 XT or Radeon X800 XT Platinum Edition) from ATI or any of its partners.

Note:
If the clock speed of the CrossFire Edition graphics card and standard PCI Express graphics card are different, both cards will operate at their individual clock speeds.

The PCI Express Slots



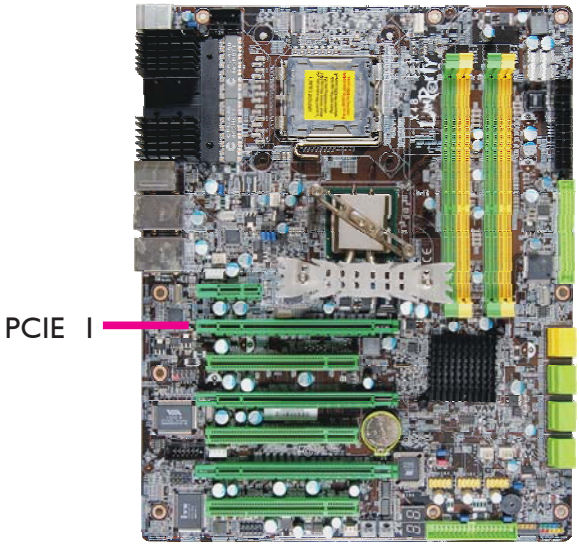
Configurations

- 2 PCI Express (Gen 2) x16 slots (PCIE 1 and PCIE 3)
  - 2-way CrossFire at x16/x16 bandwidth
  - 2-way CrossFire + Physics at x16/x16/x4 bandwidth
- 1 PCI Express x1 slot (PCIE 2)
- 1 PCI Express x4 slot (PCIE 4)

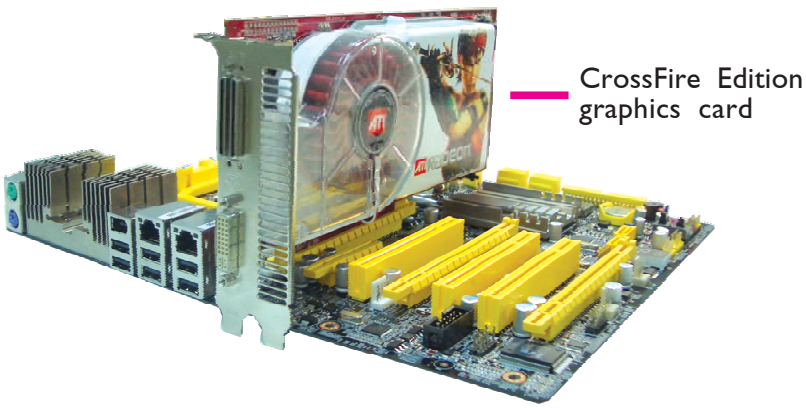
CrossFire Setup

Note:
The system board used in the following illustrations may not resemble the actual board. These illustrations are for reference only.

1. Power-off the system and monitor then unplug the power cord.
2. Remove the screw of the bracket that is opposite the PCIE 1 slot then remove the bracket.

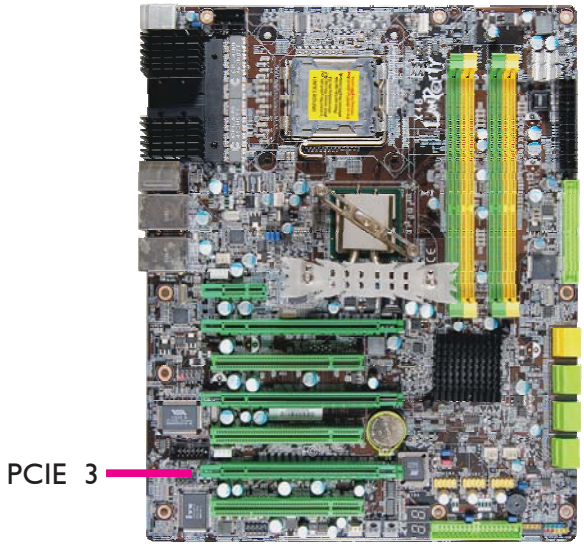


3. Align the CrossFire Edition graphics card (Master) above the PCIE 1 slot then press it down firmly until it is completely seated in the slot.



4. Secure the graphics card with the screw you removed in step 2.

5. Remove the screw of the bracket that is opposite the PCIE 3 slot then remove the bracket.



6. Align the standard PCI Express graphics card (Slave) above the PCIE 3 slot then press it down firmly until it is completely seated in the slot.

7. Secure the graphics card with the screw you removed in step 5.

8. Connect the two graphics cards by using the cable that came with the graphics card. Refer to the graphics card's user guide for details.

9. Connect auxiliary power source from the power supply unit to the graphics cards.

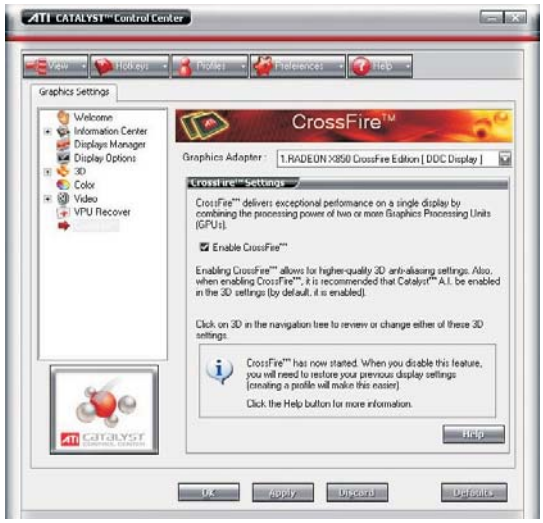
10. Install the graphics cards' drivers then restart the system for the drivers to take effect.

11. When you enter the operating system, you will notice the ATI Catalyst Control Center icon added onto your desktop. Double-click this icon.

12. Click the View tab then select Custom View.

13. In the Graphics Settings menu (left side of screen), click CrossFire. The CrossFire Settings screen will appear on the main window. Click "Enable CrossFire" then click "Yes" to continue.

14. The screen on the right indicates that CrossFire has been enabled. Make sure to restart the PC for CrossFire to take effect.



Appendix A - System Error Message

When the BIOS encounters an error that requires the user to correct something, either a beep code will sound or a message will be displayed in a box in the middle of the screen and the message, PRESS F1 TO CONTINUE, CTRL-ALT-ESC or DEL TO ENTER SETUP, will be shown in the information box at the bottom. Enter Setup to correct the error.

POST Beep

There are two kinds of beep codes in the BIOS. One code indicates that a video error has occured and the BIOS cannot initialize the video screen to display any additional information. This beep code consists of a single long beep followed by three short beeps. The other code indicates that a DRAM error has occured. This beep code consists of a single long beep.

Error Messages

One or more of the following messages may be displayed if the BIOS detects an error during the POST. This list indicates the error messages for all Awards BIOSes:

CMOS BATTERY HAS FAILED

The CMOS battery is no longer functional. It should be replaced.

Caution:

Danger of explosion if battery incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the battery manufacturer's instructions.

CMOS CHECKSUM ERROR

Checksum of CMOS is incorrect. This can indicate that CMOS has become corrupt. This error may have been caused by a weak battery. Check the battery and replace if necessary.

DISPLAY SWITCH IS SET INCORRECTLY

The display switch on the motherboard can be set to either monochrome or color. This indicates the switch is set to a different

setting than indicated in Setup. Determine which setting is correct, either turn off the system and change the jumper or enter Setup and change the VIDEO selection.

FLOPPY DISK(S) fail (80)
Unable to reset floppy subsystem.

FLOPPY DISK(S) fail (40)
Floppy type mismatch.

Hard Disk(s) fail (80)
HDD reset failed.

Hard Disk(s) fail (40)
HDD controller diagnostics failed.

Hard Disk(s) fail (20)
HDD initialization error.

Hard Disk(s) fail (10)
Unable to recalibrate fixed disk.

Hard Disk(s) fail (08)
Sector Verify failed.

Keyboard is locked out - Unlock the key
The BIOS detects that the keyboard is locked. Keyboard controller is pulled low.

Keyboard error or no keyboard present
Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.

Manufacturing POST loop
System will repeat POST procedure infinitely while the keyboard controller is pull low. This is also used for the M/B burn in test at the factory.

BIOS ROM checksum error - System halted
The checksum of ROM address F0000H-FFFFFH is bad.

Memory test fail
The BIOS reports memory test fail if the memory has error(s).

Appendix B - Troubleshooting

Troubleshooting Checklist

This chapter of the manual is designed to help you with problems that you may encounter with your personal computer. To efficiently troubleshoot your system, treat each problem individually. This is to ensure an accurate diagnosis of the problem in case a problem has multiple causes.

Some of the most common things to check when you encounter problems while using your system are listed below.

1. The power switch of each peripheral device is turned on.
2. All cables and power cords are tightly connected.
3. The electrical outlet to which your peripheral devices are connected is working. Test the outlet by plugging in a lamp or other electrical device.
4. The monitor is turned on.
5. The display's brightness and contrast controls are adjusted properly.
6. All add-in boards in the expansion slots are seated securely.
7. Any add-in board you have installed is designed for your system and is set up correctly.

Monitor/Display

If the display screen remains dark after the system is turned on:

1. Make sure that the monitor's power switch is on.
2. Check that one end of the monitor's power cord is properly attached to the monitor and the other end is plugged into a working AC outlet. If necessary, try another outlet.
3. Check that the video input cable is properly attached to the monitor and the system's display adapter.
4. Adjust the brightness of the display by turning the monitor's brightness control knob.

The picture seems to be constantly moving.

1. The monitor has lost its vertical sync. Adjust the monitor's vertical sync.
2. Move away any objects, such as another monitor or fan, that may be creating a magnetic field around the display.
3. Make sure your video card's output frequencies are supported by this monitor.

The screen seems to be constantly wavering.

1. If the monitor is close to another monitor, the adjacent monitor may need to be turned off. Fluorescent lights adjacent to the monitor may also cause screen wavering.

Power Supply

When the computer is turned on, nothing happens.

1. Check that one end of the AC power cord is plugged into a live outlet and the other end properly plugged into the back of the system.
2. Make sure that the voltage selection switch on the back panel is set for the correct type of voltage you are using.
3. The power cord may have a "short" or "open". Inspect the cord and install a new one if necessary.

Floppy Drive

The computer cannot access the floppy drive.

1. The floppy diskette may not be formatted. Format the diskette and try again.
2. The diskette may be write-protected. Use a diskette that is not write-protected.
3. You may be writing to the wrong drive. Check the path statement to make sure you are writing to the targeted drive.
4. There is not enough space left on the diskette. Use another diskette with adequate storage space.

Hard Drive

Hard disk failure.

1. Make sure the correct drive type for the hard disk drive has been entered in the BIOS.
2. If the system is configured with two hard drives, make sure the bootable (first) hard drive is configured as Master and the second hard drive is configured as Slave. The master hard drive must have an active/bootable partition.

Excessively long formatting period.

If your hard drive takes an excessively long period of time to format, it is likely a cable connection problem. However, if your hard drive has a large capacity, it will take a longer time to format.

Parallel Port

The parallel printer doesn't respond when you try to print.

1. Make sure that your printer is turned on and that the printer is on-line.
2. Make sure your software is configured for the right type of printer attached.
3. Verify that the onboard LPT port's I/O address and IRQ settings are configured correctly.
4. Verify that the attached device works by attaching it to a parallel port that is working and configured correctly. If it works, the printer can be assumed to be in good condition. If the printer remains inoperative, replace the printer cable and try again.

Serial Port

The serial device (modem, printer) doesn't output anything or is outputting garbled characters.

1. Make sure that the serial device's power is turned on and that the device is on-line.
2. Verify that the device is plugged into the correct serial port on the rear of the computer.

3. Verify that the attached serial device works by attaching it to a serial port that is working and configured correctly. If the serial device does not work, either the cable or the serial device has a problem. If the serial device works, the problem may be due to the onboard I/O or the address setting.
4. Make sure the COM settings and I/O address are configured correctly.

Keyboard

Nothing happens when a key on the keyboard was pressed.

1. Make sure the keyboard is properly connected.
2. Make sure there are no objects resting on the keyboard and that no keys are pressed during the booting process.

System Board

1. Make sure the add-in card is seated securely in the expansion slot. If the add-in card is loose, power off the system, re-install the card and power up the system.
2. Check the jumper settings to ensure that the jumpers are properly set.
3. Verify that all memory modules are seated securely into the memory sockets.
4. Make sure the memory modules are in the correct locations.
5. If the board fails to function, place the board on a flat surface and seat all socketed components. Gently press each component into the socket.
6. If you made changes to the BIOS settings, re-enter setup and load the BIOS defaults.

POST (hex)	Debug Code Action	BIOS Program Definition	Possible Cause	Solution
Power on	None, blank	Nil	1. CMOS jumper is set at pins 2-3.	1. Set the CMOS jumper to pins 1-2 (default).
			2. 5Vsb of PSU is insufficient. (Minimum required - 2A)	2. Replace a suitable PSU.
00	Power on -> Stopped at **00**	BIOS program starts to set VID/FID to initialize CPU. (Boot Block area).	1. Mixed-up BIOS data.	1. Clear the CMOS data.
			2. Defective CPU connection.	2. Remove and reinstall the CPU.
			3. Incompatible PSU.	3. Replace a suitable PSU.
			4. No CPU power.	4. Inspect the 12V connection.
			5. Reset button short-circuited.	5. Inspect the cable that connects the reset button to the front panel connector.
00	Power on -> **00** -> Reset -> Looping	CPU VID is incorrect.	PSU does not comply with the system's requirement.	Replace a PSU that will provide adequate power to the system.
A0	00 -> C1 -> Stopped at **A0**	A0~AF Definition: Initializing memory check code.	1. Incompatible memory modules.	1. Remove and reinstall the memory modules.
			2. Mixed-up BIOS data.	2. Clear the CMOS data.
b8	00 -> C1 -> Stopped at **b8**	B0~BF Definition: Initializing memory/devices check code (registers).	1. Mixed-up BIOS data.	1. Clear the CMOS data.
			2. Incompatible memory modules.	2. Remove and reinstall the memory modules.
			3. Incompatible PCI devices.	3. Remove and reconnect the PCI devices.
C0	00 -> Stopped at **C0**	Initializing memory.	1. Probing for failed memory devices.	1. Make sure the memory modules are installed properly in the slots.
			2. SPD value is lost or empty.	2. Replace the memory modules.

POST (hex)	Debug Code Action	BIOS Program Definition	Possible Cause	Solution
C1	00 -> C0 -> Stopped at **C1** (00 -> C0 -> C1 ->) Reset -> Looping)	Detecting memory. Detecting DRAM size and type. ECC auto-detection of L2 cache.	1. Incompatible memory modules.	1. Remove and reinstall the memory modules.
			2. Overclocking issue (tight DRAM timing).	2. Clear the CMOS then load the default speed.
			3. One of the memory modules is defective.	3. Try installing a single module only.
C3/C5	C0 -> C1 -> Stopped at **C3/C5** (C0 -> C1 -> C3 ->) Reset -> Looping)	Expanding compressed BIOS code to the DRAM.	1. Tight DRAM timing (system is unstable).	1. Clear the CMOS then load the default speed.
			2. Insufficient DRAM voltage.	2. Increase the DRAM's voltage.
			3. Overclocking issue.	3. Remove and reinstall the memory modules.
CF	Shutdown -> Stopped at **CF** (Shutdown -> CF -> Reset)	Resume on S1/S3 failed.	1. Insufficient DRAM voltage.	1. Increase the DRAM's voltage.
			2. Incompatible memory modules.	2. Remove and reinstall the memory modules.
			3. Overclocking issue (tight DRAM timing).	3. Load the default DRAM speed.
			4. BIOS issue.	4. Upgrade to the latest BIOS.
E0	C0 -> C1 -> Stopped at **E0**	E0-EF Definition: Initializing PCIE device check code.	1. Mixed-up BIOS data.	1. Clear the CMOS data.
			2. Incompatible PCI devices.	2. Remove and reinstall the PCI device.

POST (hex)	Debug Code Action	BIOS Program Definition	Possible Cause	Solution
25	00 -> C1 -> C3 -> Stopped at **25**	Enumerating PCI bus number. Assigning memory & I/O resource - searching for a valid VGA device & VGA BIOS then placing it in C000:0.	1. Incompatible PCI devices.	1. Remove all PCI/PCIE devices and leave only the graphics card to test first. Test the devices one at a time to determine the one with problem.
			2. Incompatible USB devices.	2. Remove all USB devices including the USB keyboard and instead use a PS/2 keyboard to test.
			3. Defective graphics card. (VGA BIOS did not initialize)	3. Replace the graphics card.
			4. The graphics card was not installed properly.	4. Remove and reinstall the graphics card.
26	00 -> C1 -> C3 -> Stopped at **26**	Initializing display card. Initializing onboard clock generator. Disabling respective clock resource to empty PCI & DIMM slots. Initializing onboard PWM3. Initializing onboard H/W monitor devices.	1. Defective graphics card.	1. Replace the graphics card.
			2. Initialized wrong BIOS process. (Clock-gen circuit / Super IO circuit)	2. Clear the CMOS data.
41	C3 -> 25 -> 26 -> Stopped at **41**	Initializing the FDD device.	Detected floppy error.	Unplug the FDD cable and check for errors or check the BIOS settings.
			* Mixed-up BIOS data could be one of the causes too.	* Replace a new BIOS chip.
50	Power on -> Stopped at **50**	Initializing USB devices.	1. USB failed to boot. (BBS issue)	1. Clear the CMOS data first.
			2. Incompatible USB devices.	2. Try connecting the device to another USB port. 3. Test the USB devices one by one. 4. Set the USB power source to 5V by means of the 5V/5Vsb select jumper.

POST (hex)	Debug Code Action	BIOS Program Definition	Possible Cause	Solution
75	Power on -> Stopped at **75**	Initializing storage devices. (Probing for IDE devices or SATA devices)	1. Lost power source of some devices.	1. Inspect the power cable connection.
			2. Incompatible SATA or PATA device.	2. Inspect the IDE cable connection or replace another PATA/ SATA device.
			3. CD-ROM's spin took too long.	3. Remove the disc, if present, from the CD-ROM device.
7F	Power on -> Stopped at **7F** * Checksum error always appear after the BIOS default has been loaded.	BIOS setup module in progress. Reporting BIOS check errors. Waiting for keys: DEL key to load the BIOS default. F1 key to continue.	1. Checksum error occured. (Change/add devices such as CPU/ DRAM)	1. Load the optimized default setting of the BIOS.
			2. Error occured after clearing the CMOS.	2. Alter or adjust the BIOS setting.
			3. Onboard battery is depleted.	3. Replace a new battery.
			4. Overclocking issue.	4. Decrease the overclock range.
			* The battery circuit of the MB is defective.	* RMA action required.
FF	Power on -> Run to **FF** * Blank Screen	Boot attempt (INT 19h) System booted normally.	Normal Operation	Nil
			* The graphics card was not connected properly or it is defective.	* Remove and reinstall the graphics card.

POST (hex)	Debug Code Action	BIOS Program Definition	Possible Cause	Solution
79	Power on -> Prompt Stopped at **79**	There is no “79” definition on the Award BIOS code. (BIOS program executed the wrong process therefore showing the wrong POST code.)	1. Mixed-up BIOS data.	1. Clear the CMOS data.
			2. MB is defective. (NB chip may be defective.)	2. RMA action required.
88	Power on -> Prompt Stopped at **88**	There is no “88” definition on the Award BIOS code. (BIOS program executed the wrong process therefore showing the wrong POST code.)	1. Mixed-up BIOS data.	1. Clear the CMOS data.
			2. MB is defective. (NB chip may be defective.)	2. RMA action required.
FF	Power on -> Prompt Stopped at **FF**	Definition: BIOS process completed. (BIOS program executed the wrong process therefore showing the wrong POST code.)	1. Mixed-up BIOS data.	1. Clear the CMOS data.
			2. MB is defective. (NB chip may be defective.)	2. RMA action required.

Index

Clearing CMOS Data

1. Turn-off and unplug the AC power.

2. Move the jumper cap from pins 1-2 to pins 2-3.

3. Wait for 5 seconds then move the jumper cap back to pins 1-2.

1-2 On: Normal (default)

2-3 On: Clear CMOS Data

Totally Discharging the Motherboard

Unplug the AC power and remove the battery for 5 minutes then reinstall the battery and plug the AC power back on.